The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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On Hydraulic Machinery for Steel Works.*

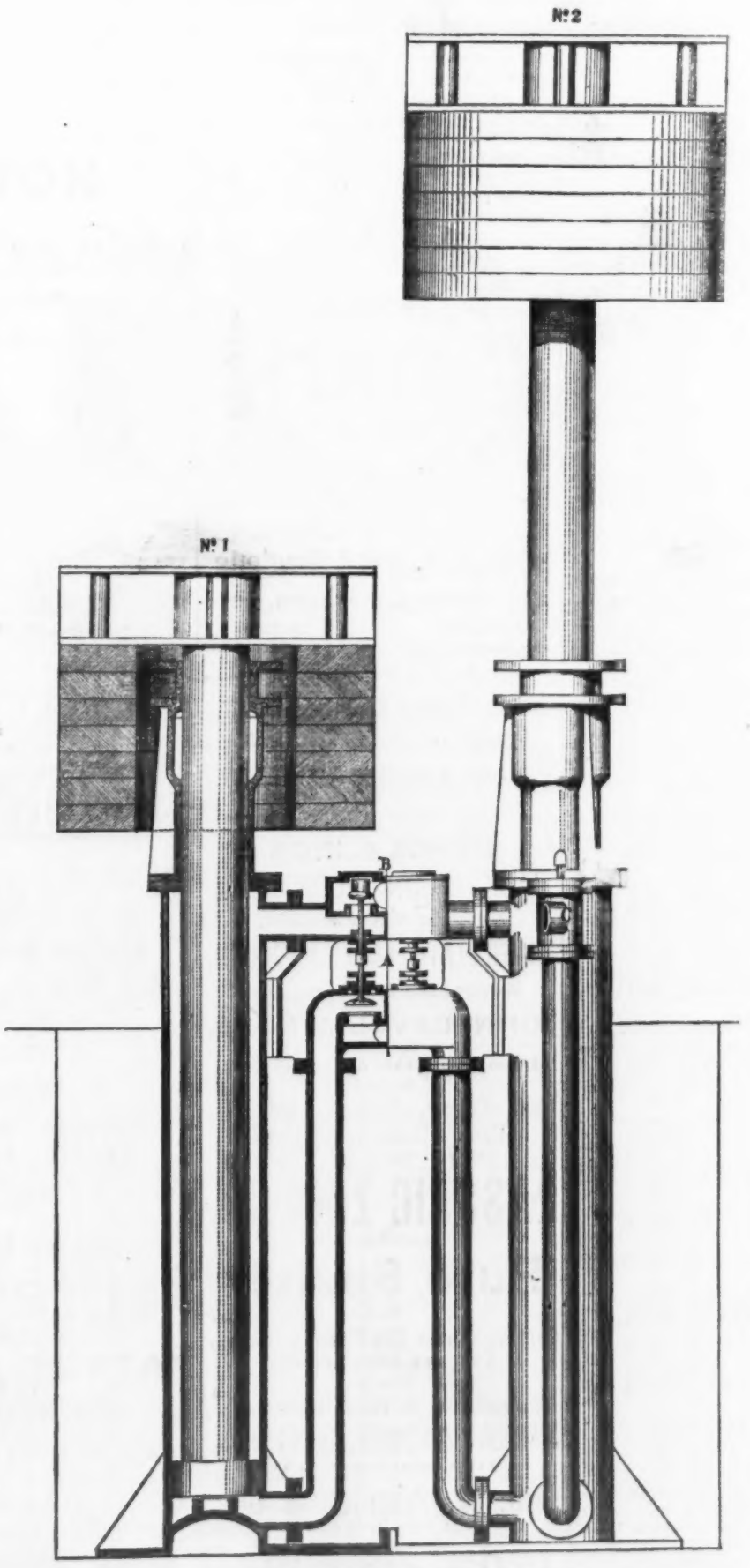
BY MICHAEL SCOTT.

It is well known that direct-acting hydraulic cranes and lifts of the ordinary kind are imperfect in these two particulars: The weight of the moving parts is considerable, and loss is incurred by the necessity of raising this weight as well as the load; secondly, if the lifting power of the crane be invariable, then, in raising variable loads, power must occasionally be lost. It would, therefore, appear to be desirable to provide means by which the weight of the moving parts of cranes and lifts should be balanced, and the power should be varied in proportion to the load to be raised. This has been done; but I have been trying to devise something which should be less complicated and costly, be more readily applicable to existing plant without involving considerable alterations and interruption of work, and be suitable for general adoption. The loss arising, especially from the first source to which I have referred, is perhaps greatest in the case of ingot cranes and lifts employed in Bessemer steel works, the proportion of dead weight of the moving parts being great compared with the load, and in cranes the action frequent. I therefore propose, in the present instance, to restrict my remarks to the operation of such cranes and lifts as are ordinarily employed in England.

It may safely be asserted that by far the largest part of the steel produced in England has been in the form of ingots weighing less than a ton each, and the ingot and mold combined has been under two tons. This being so, it is evident that cranes which could lift the latter weight should be sufficient to do the work, even if the ingots should occasionally stick in the molds, so that both had to be lifted at once, or if two ingots were raised at the same time. But while this may be granted, heavier ingots are occasionally made, and there are other things to lift. Moreover, there seems to be a growing tendency toward the production of heavy ingots, so that we find cranes made to lift four tons and upward. In such event, it is obvious that if there were a run of light work, the action of the cranes would involve a loss of power which might be saved if the lifting power could be varied at will, but the more important, because permanent, source of loss would arise from the great weight of the moving parts of the cranes in relation to the load to be lifted. As ingot cranes command a considerable area, the jib requires to be of a corresponding length of radius; then in order to secure the necessary strength of parts, and partly to counterbalance the load, so far as the jib is concerned, by a back balance, the weight of the moving parts becomes proportionately great. Thus there is a loss in the operation of unbalanced cranes, an observation which likewise applies to center-ladle and other lifts. But it is not the loss of power represented by the consumption of fuel which is most important, because with the improved steam engines now in use water can be supplied under high pressure at a very low rate; the chief loss arises from the size and cost of the pumping apparatus, including engines, boilers, pumps, accumulators, foundations, and buildings, which require to be provided and kept in operation to supply under pressure double the quantity of water which is utilized, or rather which is necessary to do the work.

I have been considering how the waste water from cranes could be made to restore a portion of the power through the medium of the pumps employed to charge the accumulator. I propose that certain engines or machines be provided which would receive the waste water from the cranes and lifts at a low pressure, and return a proportion of it at a high pressure. Further, by the instrumentality of the machines, water could be supplied at various pressures. This will be understood from the following description of the apparatus and the *modus operandi*:

On referring to the diagram, it will be observed that, in order to provide for uninterrupted continuous action, there are two machines similar in form and dimensions. Each consists mainly of a hydraulic cylinder and ram, the lower end of which is a piston fitting the cylinder, and on the top of each ram rests a weight. Speaking generally, the action of the machines would be as follows: The waste water from the cranes and lifts being under the pressure due to the weights on their descending rams, on its admission into the cylinder of one machine below the piston, it and the ram would rise. When up to the top of the stroke, the waste water from the cranes would be shut off, and it would be turned on to the other machine, whose piston and ram would likewise ascend. Meantime, communication having been opened between the top and bottom of the cylinder of the first machine, and simultaneously between the cylinder and the high-pressure main supplying the cranes and lifts, the piston, so far as the annular space around the ram is concerned, would be in equilibrium, and the counterpoise weight would cause it and the ram to descend, forcing out of the cylinder and into the pressure main a quantity of water equal to the capacity of the cylinder minus that of the annular space, or, in other words, equal to the displacement of the ram. It will be obvious that the pressure required to raise the ram, acting as it would upon the whole area of the piston, would be less than the pressure under which the water would be expelled when the ram descended, when the surface upon which the pressure would act would be the area of the ram only, and by varying the relative proportions of piston and ram any difference of pressure might be obtained, and that, so far as the action of the machines is concerned, deducting friction, the power expended in raising the rams would be given out again in their descent in a more concentrated form.



SCOTT'S APPARATUS FOR UTILIZING THE WASTE WATER OF HYDRAULIC CRANES.

The action of the machines would be simple and automatic, the valves being worked as follows: Let the machines be called No. 1 and No. 2. Let the valve admitting waste water from the cranes and lifts be called A; the valve by which the waste water from the machine, that is, from the annular space above the piston, escapes, be called B; and the valve connecting the top and bottom of the cylinder, and simultaneously the cylinder with the pressure main, be called C. It will be observed that the valves A and B are united by the stem or spindle, and therefore move simultaneously; but A being greater in area than B, its (B's) action is controlled by A. The valve C is a piston valve, and is always in equilibrium; and while A and B are self-acting, C is moved by a lever actuated by a tappet rod; the valve of No. 1 machine being moved by No. 2 machine, and *vice versa*. Now suppose that in machine No. 2 the piston was at the top of its stroke, and in machine No. 1 the piston was at the bottom of its stroke, and the valve C closed; the valves A and B would open, the former (A) admitting waste water from the cranes under the piston, and the latter (B) permitting the water in the annular space above the piston to escape, when the piston and ram would rise. On commencing the upward stroke the tappet rod* would open valve C of machine No. 2, the piston of which was at the top of its stroke, and the valves A and B of which have shut by gravity; and the piston being thus put into equilibrium, the weight upon the ram would cause it to descend, the valves A and B being kept shut by reason of the pressure on and superior area of A compared with B. When the piston of No. 1 was near the top of its stroke, its tappet rod would shut valve C in machine No. 2, and its piston, which had reached the bottom of its stroke, would reascend, and in so doing would open valve C of machine No. 1, whose piston would then descend. Thus the action would be continuous.

But it may be asked: Suppose one piston arrives at the top of its stroke before the other piston gets to the bottom—say No. 2 arrives at the top before No. 1 is at the bottom? In such an event valve C of No. 1 would be closed, and its piston would again ascend without having completed its down stroke, and without having opened valve C of No. 2, the piston of which would therefore remain up. This should never occur, because not much above half the number of lifts or strokes of the cranes and lifts would be required to allow of the descent of the machine piston as are required to cause the ascent of the piston of the other machine; and the pressure put upon the water supplied by the machines being somewhat higher, if it were not consumed by the cranes it would go to the main accumulator.

Should the converse occur, viz., should one piston arrive at the bottom of its stroke before the other reached the top, this would be right, for it would simply remain at the bottom until the other piston was near the top, when, as has been explained, it would shut valve C of the first named, which would then ascend, and in rising would open valve C of the second machine and allow its piston to descend.

I have now to show how the lifting power of cranes could be varied, without which they would always be working under a pressure required to raise the maximum load, and when lifting less there would be a loss of power. As the machines described do not return the whole of the water into the pressure main supplying the cranes and lifts, it is evident that a portion must be derived from the original source of supply, viz., the main accumulator of the works. It is not proposed to change the pressure of this water, but that it should be fixed at such an amount as would be sufficient for central ladle-lifts and the general purposes of the works, and when the power of the cranes had to be increased, that the water should be supplied to them by the machines described; but it should be noted that although the water required for central and other lifts would be derived from the works accumulator, the waste from all lifts and cranes would pass through the balancing machines.

Now, suppose that the usual output consisted of ingots weighing about a ton, but that occasionally they were made heavier, say two or three tons, then let the pressure from the works accumulator and the normal pressure from the machines be sufficient for the light ingots, which are assumed to be the mass of the production; for the heavier lifts, the water would be supplied at a higher pressure by the machines. If only half the quantity of water which passed through the machines was returned by them at high pressure, this might be sufficient to deal with heavy loads, because as the weights increased the number of lifts would decrease; that is, a charge of say eight tons would produce eight ingots of one ton, and only four of two tons: therefore, in the latter case, only half the quantity of water would be required, and half of this might be derived from other lifts and cranes fed from the works of the accumulator, or light ingots might be in course of production at one pit, and heavy ones at another. But even if the whole output was suddenly changed from light to heavy ingots, the machines could be supplied with the additional quantity of water they required from the works accumulator, the only loss incurred being, that upon probably a third or fourth of the water passing through the machines, the difference in pressure between the works accumulator and the crane waste would be lost. Suppose this difference was 50 per cent. on a third of the total quantity; this would be equal to less than 17 per cent. lost on the whole quantity, the money value of which would be very little indeed.

The arrangement by which I propose that the pressure of the water delivered by the machines should be increased at will, and thus the lifting power of the cranes be augmented, is as follows: Premising that the weights resting upon the rams are calculated to produce the minimum pressure required—that is, something slightly above the pressure of the water from the works accumulator—two small subsidiary cylinders with solid pistons working in them would be placed alongside and parallel with the main cylinders of the machines. These small cylinders would communicate near their top with the main cylinders of the machines; their pistons would have the same stroke; and the action of main and subsidiary pistons being synchronus, no additional valves would be required to work the latter, for the water under pressure required to force the pistons down would be derived from, and the waste would escape through, the main cylinders and valves. The subsidiary pistons being connected with the counterpoise weight resting on the main ram, the downward pressure upon it would be increased by the pressure on the pistons, and consequently the pressure of the water delivered by the machines would be augmented; and as one piston, or both, or neither, might be in gear, three lifting powers would be obtained. The pistons would be connected and thrown out of gear by a very simple arrangement, consisting of pieces hinged to the top of the rods, so that the connection could be made or undone instantly. When not required, of course they would not be at work, and stop-cocks would close the communication with the main cylinders.

Ordinarily no water would be admitted under the pistons, but as small quantities would at times accumulate in the pit, a valve box would be connected with the bottom of one of the subsidiary cylinders, containing a suction and discharge valve and pipe, so that when required this cylinder and piston would act as a pump to raise the water, and when not required the operation would cease, even if the piston was in action. To effect this, from the top of the valve box an air pipe would rise to the surface; this pipe would be fitted with a stop-cock which could be opened or shut at pleasure. When shut, the cylinder and piston would act as an ordinary pump; but when open, the air would pass freely up and down the pipe, and as the valves in the box would then cease to operate, no water would be pumped. When only one subsidiary piston was in gear, the pressure of the water delivered on the descent of the main ram of the machine would be sufficient to enable the cranes to raise loads of three tons, but the pull would to some extent be one sided, causing the main ram to bear against one side of the

* A paper read before the Iron and Steel Institute.

* As the action is so simple, I have not thought it necessary to show these rods in the diagram.

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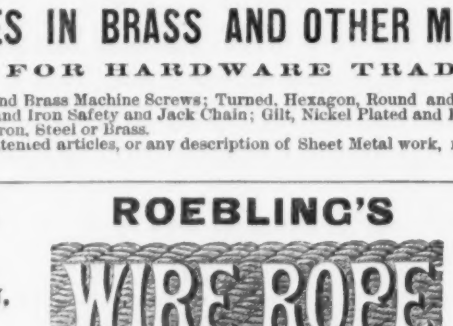

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stuffing box, which would be objectionable. Moreover, so far as the value of the power saved was concerned, the difference between raising three tons with one piston at work and four tons with two pistons, would not be important.

There would, however, be a difference in other respects. The friction of two pistons would be greater than of one, while, on the other hand, their pull being symmetrical, with both in gear the friction of the main ram would be less. Again, the consumption of water with two pistons at work would be more than with one, but this would be met by the diminished quantity, due to the number of lifts being less when the load per lift was greater, which would be the case when increased pressure was required.

From what has been said it will be apparent that the machines would operate as self-acting differential pumps, as intensifiers and as accumulators; that a pair of such machines would balance a number of cranes and lifts, and that they would supply water at different pressures, and so provide for raising various loads.

Stocks of Foreign Iron and Steel in Warehouse, June 30, 1881.

Through the courtesy of Hon. Joseph Nimmo, Jr., we have received advance sheets of a statement of the Bureau of Statistics, showing the quantities and values of imported merchandise remaining in the New York, Boston, Philadelphia, Baltimore and New Orleans warehouses of the United States on June 30, 1881. We have thus been enabled to compile the following table, in which a comparison is made between the stocks held at these five ports on June 30, 1881, and similar stocks held on December 31, 1880, in all the warehouses of the United States:

Articles.	Gross tons.		Values.	
	Dec. 31, 1880.	June 30, 1881.	Dec. 31, 1880.	June 30, 1881.
Pig iron	164,404	39,740	$3,444,946	$823,430
Castings	197	.....	12,448	.....
Bar iron	17,062	4,849	886,284	263,542
Band, hoop and scroll iron	2,249	765	111,539	34,179
Railroad bars or rails of iron	35,656	8,594	1,370,491	346,994
Sheet iron	1,896	1,354	396,353	176,947
Old and scrap iron	172,510	64,054	4,359,573	1,555,337
Hardware	42	11	12,135	14,101
Anchors, cables and chains of all kinds	.....	.....	4,910	1,019
Machinery	.....	.....	25,404	24,046
Firearms	.....	.....	47,605	45,604
Steel ingots, bars, sheets and wire	34,267	19,130	1,388,597	141,706
Railroad bars or rails of steel	.....	.....	259,006	699,445
Cutlery	.....	.....	5,642	21,220
Files	.....	.....	544	595
Saws and tools	.....	.....	216	316
Other manufactures of iron and steel, n. e. s.	.....	.....	.....	.....
Total	428,184	148,503	$12,253,523	$4,580,309

Of the whole stock of 428,184 tons held on December 31, 413,052 tons were warehoused at the five ports holding the stock of 148,503 tons on June 30. On the 1st of April, according to a statement issued by Thomas J. Pope & Brother, of New York, the stock warehoused at the same five ports was 296,032 tons. The reduction in stocks of foreign iron and steel at these five ports was, therefore, 117,020 tons in the first quarter of the year, and 147,529 tons in the second quarter. As will be seen above, there were only 148,503 tons remaining in stock on June 30, which is only about 1000 tons more than the reduction effected in the second quarter of the year. Half of the third quarter of the year has passed since June 30. There can be no doubt that the very great reduction in the stock of foreign iron and steel held at the Atlantic ports is a leading cause of the present steadiness in the prices of domestic iron and steel.—*Bulletin.*

The American Transatlantic Cable.—According to advices from England, the two transatlantic cables ordered by Jay Gould at the works of Siemens Brothers & Co., will be ready for business by September 1st. They were formally handed over by the contractors on Friday last, on which day the guarantee term of thirty days of perfect testing subsequently to the laying of the cable expired. Since the connection between Whitesand Bay and Canso was completed, hourly electrical tests have been made by the electricians in charge. They report the cable to be the very best ever laid under the Atlantic Ocean. A speed of transmission has been attained on it 30 per cent. in excess of the guarantee and 20 per cent. in excess of the speed ever attained on any other ocean cable. All that now remains to be done before opening the offices of the company for business, is to complete the quarters for the company's staff at both ends and the land line connections in England. The company's staff will be made up of men picked from the whole cable service of the world. The quarters for the American staff will be at Canso, in Nova Scotia. The English staff are established already at Whitesand Bay, a remote but very beautiful spot near the Land's End, on the west coast of Cornwall. There the English shore end of the second cable of the American Company has already been laid. The cable steamship Faraday is now taking on board the deep-sea portion of this second cable at the works of the Messrs. Siemens Brothers & Co., at Woolwich, and will soon proceed to sea to lay it. It is possible, indeed, that both the cables of the new company will be laid and in operation before the time at which, judging from the experience of the European companies, we should have been justified in expecting to see the first one actually in use. The London offices of the American Cable Company are in the Royal Exchange.

The Foreign Iron Trade in 1880 and 1881.

Mr. James M. Swank gives the following summary of the foreign iron trade in 1880 and 1881:

The condition of the foreign iron and steel industries since the latter part of the year 1879 has been one of general and continuous prosperity. Production and consumption have largely increased, and prices have been more favorable for producers than during the immediately preceding years. All of the iron-making world has experienced a prosperity akin to that which was restored to the iron and steel industries of our own country in 1879, and it is not saying too much to claim that the prosperity of these industries in other countries has been in large part due to the phenominal demand created by the United States for their iron and steel products. A little more than a year ago agents were hunting in almost every European country for iron and steel rails, pig iron, old iron rails, old pots and other scrap iron for shipment to the United States. So great was our iron hunger that even countries at the antipodes, which have no prominence in the manufacture of iron, contributed of their scanty supply of this article to relieve our distress. The imports of foreign pig iron at Boston during the third week of April, 1880, included 105 tons per bark Elizabeth from Australia, and in May of the same year about 400 tons of rails of the first, and, thus far, the only Chinese railroad, which had been torn up by the natives in 1877, were landed at New York from the ship Tiber, which sailed from Shanghai in the preceding month of March.

The American demand for both new and old iron and steel supplies has since declined, but the prosperity which this demand helped to create in the iron and steel industries of our European kin beyond sea still continues, although, as in this country, in a modified degree, and we are glad to chronicle the fact that it promises to continue for some time to come.

Without undertaking in this general statement to trace the course of the European iron trade during the year 1880 and the first half of the present year, it will be sufficient to note its condition at the present time.

The demand for British iron and steel products is not equal to the immense capacity of its various iron and steel works, but it is still larger than it has been during many recent years, except in 1880, while prices are not nearly so low as they were two years ago. Steel especially is in demand, and it is probable that the steel production of this year will exceed that of last year. There is also special activity in the production of iron for iron ships, English and Scotch shipyards being very busy, and requiring large quantities of both iron and steel. The improved foreign demand within the past two years for British iron and steel products of all kinds is, of course, the main cause of the prosperity that the British iron and steel industries are now experiencing, but during these two years there has also been a partial revival of general industrial activity in Great Britain herself which has contributed to the prosperity of the particular industries mentioned. The only unsatisfactory feature of the British iron trade that now exists and is worthy of notice is the large accumulation of pig iron beyond the demands of the domestic and foreign markets, but England and Scotland had so largely exceeded in 1880 the production indicated by legitimate orders and ordinary British foresight as sufficient for the time that this accumulation, while productive of low prices, should not be permitted to obscure the fact that the sales of pig iron by Great Britain this year will be far beyond the average annual sales of the last 10 years. Concerning the prices which Great Britain will this year receive for her pig iron, it does not appear that the producers of such iron as may be sold are in need of anybody's sympathy. The *Ironmonger*, it is true, sorrows as one without hope when it looks at the mountains of British pig iron which nobody wants at any price, but it lets a flood of light upon the situation when it admits that "we have made the iron now in hand more cheaply than at any period of our history." Great Britain is now reducing her production of pig iron by blowing out some of her furnaces, and the close of the year will probably see her stocks somewhat reduced and prices no lower than they are today. Prices for all iron products were firm in July.

On the Continent the activity of 1880 is well maintained. During the early part of the present summer there were some indications of a tendency to over-production and weakness in prices, especially in France and Germany, but in June the markets fully recovered the healthy tone which had previously characterized them. This favorable condition has since continued. Prices are low, as they now are in every important iron and steel producing country, but low prices may be borne if consumption is active and stocks are not allowed to accumulate. A feeling of confidence now prevails, no signs of an unfavorable reaction being anywhere apparent. On the 15th of July the London *Iron* said: "The iron trade of the Continent is experiencing the full benefit of the large demand made upon it from all sides. A healthy tone has now become the permanent and universal feature of the Continental iron markets, and prices have had an upward tendency."

The peace which is now general throughout Europe greatly promotes the prosperity of its iron and steel industries, as well as of all other industries which require stable conditions to secure their healthy development. To this favorable influence is added, on the Continent, another important influence which seems to be more marked at this time than at any previous time in European history—the spirit of industrial independence. A strong disposition to develop native manufacturing resources is observable in perhaps every Continental country except Turkey, and in none more conspicuously than in Spain and Italy, which have not heretofore been specially noted for industrial activity. Austria earnestly joins in this forward movement; Russia welcomes it, but her progress is impeded by many ob-

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stacles; Sweden, Holland and Switzerland must see in it an improvement upon their own patient, but not aggressive industrial methods; while France, Germany and Belgium carry its flag and gather its substantial rewards more abundantly than their neighbors who have but recently felt its impulse. Railroads and machinery and the impressive example of the United States in developing all its resources are aiding the liberal spirit of the age to revolutionize Continental Europe, by giving industrial rather than military employment to its people. The manufacture of iron and steel is one of the industries of the Continent which is benefited by this peaceful revolution.

English newspapers note and uneasily comment upon the growing disposition of Continental countries to develop their own manufacturing resources, especially of iron and steel. The *Ironmonger* bewails its effect upon the iron and steel industries of Great Britain by remarking that "Germany needs very little of our pig iron, Belgium is only a moderate buyer, Russia excludes us under its new tariff, Austria-Hungary is self-supplying, Italy uses but small quantities, and France is nearly wholly self-supplying; Holland is a buyer on a small scale, as is Denmark; Sweden and Norway make better iron than we can provide for them." *Iron* more comprehensively declares that "the development of the iron trade on the Continent during the last half century has made such enormous strides that it would have been strange, indeed, if it had not been felt also in this country. Not only have foreign makers succeeded in almost entirely replacing certain of our products by their manufactures in their respective countries, but they have entered markets which were formerly looked upon as entirely our own." The expansion and the competition of the Continental iron trade which are here so frankly confessed, have been much more marked in the last decade than in any preceding decade.

Nations which insist on opening their own mines and developing all of their own resources, and which afford opportunities to their humblest people to obtain a proprietary interest in the soil, are not going backward, but are going forward; and the hope may, therefore, be entertained that, with continued peace in Europe, the spirit of industrial independence which now prevails on the Continent will before long operate as a check to excessive emigration. We may be sure of one result—it will not, in any naturally fertile and favored country, create such a condition of privation and suffering among its inhabitants that the government of that country will be tempted to assist in its depopulation by offering a bounty to all who will expatriate themselves. Other countries may become as poor as Ireland, but not because the rulers of those countries insist upon upholding the right of their people to be employed at home in whatever honest labor their hands and their brains fit them to perform.

METALLURGICAL NOTES.

THE HARMET PROCESS.

The Harmet process of transferring partly decarburized metal from an acid to a basic converter as an adjunct of the basic dephosphorizing process, is reported by Mr. Jeans to be increasing in favor. It is said to have been adopted at the works of Denain, Creusot and Hayange, in France, while in Germany it has been tested at Ruhrort and Hoerde. It is claimed for this process that it allows the use of pig iron of varying composition with a smaller quantity of basic additions, that the elimination of the injurious elements is more complete, and that the erosion of the basic converter is diminished. The blow is first carried on in the acid converter until the disappearance of the carbon lines. In the basic converter, to which the metal is then transferred, the blow lasts only 4 to 5 minutes, the time required for the afterblow proper.

THE SIEMENS DIRECT PROCESS AT LANDORE.

It seems that the success of his direct process in this country has led Dr. Siemens to take it up again in Landore. Mr. Jeans states, in the Transactions of the Iron and Steel Institute, that numerous experiments are being made there with a modified rotator. "Some of the more recent results," he adds, "are sufficiently remarkable to encourage the hope that the direct process will, after all, come into large use." From what is reported of the financial results of the Pittsburgh work in that direction, it looks as though that use were going to be very large indeed.

BAUXITE IN THE PUDDLING FURNACE.

MM. Aubertin and Boblique base upon the fact that phosphate of alumina is only slowly decomposed by an excess of silica, a method of using bauxite—a mineral consisting of alumina—for the dephosphorization of pig iron, and it is stated that their method is now in use at the works of Crochot, near Dampierre sur-Salon, department of Haute-Marne, France. It is to be used as an addition and as a lining both in the puddling furnace and in the Bessemer converter. In general, 5 to 6 pounds of bauxite are sufficient per 100 pounds of iron to be puddled. Experiments made with Frouard pig, containing 1.6 per cent. of phosphorus, showed only 0.12 per cent. in the finished product, and at Fourchambault iron holding 0.42 per cent. of phosphorus was reduced to 0.073. At Liége, Sclessin pig was brought down from 2.08 to 0.11, and at Champigneul, near Nancy, similar results were obtained.

DAMPING DOWN BLAST FURNACES.

At the Redburn Hill Iron Works, Brigg, Lincolnshire, England, a boiler explosion occurred on the 16th of January which led to the damping down of the blast furnaces, and, with a view to preventing a similar accident in the future, it was decided, while doing the necessary repairs it entailed, to cut all the eight boilers, which were of the long cylindrical type, in two. This required considerable time, and some anxiety was felt as to what state the furnaces would be in when everything was again ready for work. The blast was got on on the 22d of February, and both furnaces started without any trouble or difficulty; the cinder was "black"

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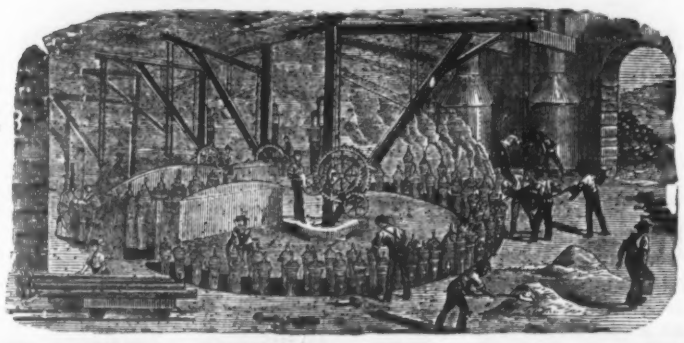

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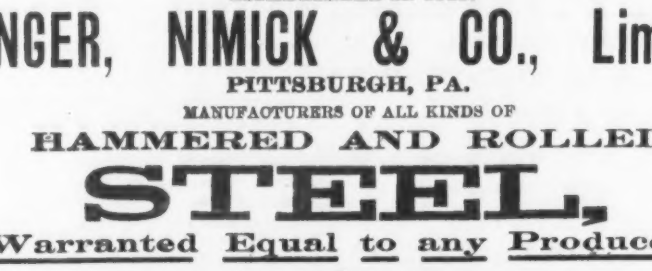

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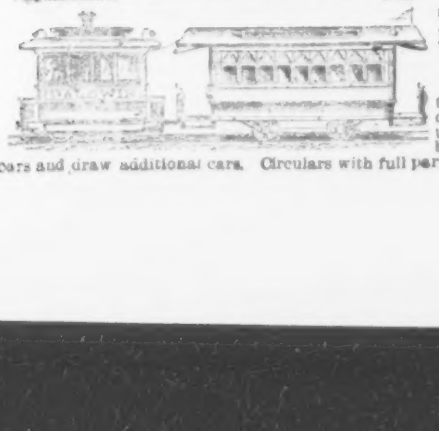

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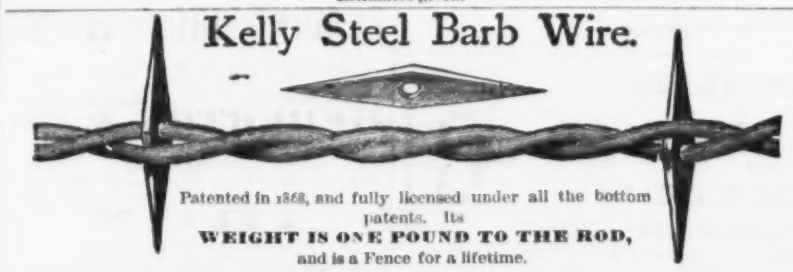

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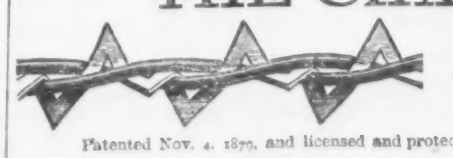

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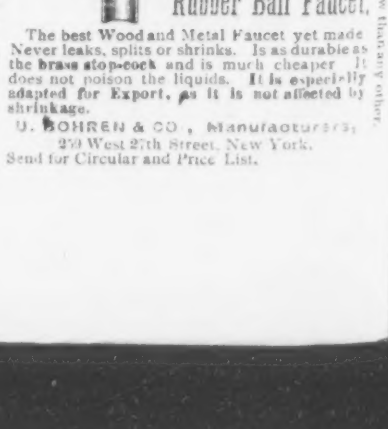

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for the first 24 hours, after which it turned to "gray," as it has continued since. This shows how long furnaces in fair condition may be allowed to stand without serious injury, an important fact in such emergencies as strikes or stoppage for unavoidable repairs or absence of supplies.

A NEW THEORY OF THE CEMENTATION PROCESS.

Mr. R. Sydney Marsden has brought forward, at a meeting of the Chemical Society, what he claims to be a new theory of the cementation process for the conversion of wrought iron into steel. He has observed that when amorphous carbon in an impalpable powder is kept in contact with porcelain at a temperature considerably above redness, but not sufficient for the latter to become fused, the carbon will, if left for a number of hours, diffuse into the porcelain and ultimately permeate it throughout. He considers the conversion of wrought iron into steel by the cementation process as analagous to this—that is to say, the result of diffusion of carbon in an impalpable powder into the bars of iron while they are in an expanded or softened state.

THE ESTON BASIC STEEL.

At the Eston Steel Works four nominally 15-ton converters are working on the basic process, the vessels being 24 feet 3 inches high from the tuyeres, with diameter a maximum of 10 feet 8 inches. The manufacture of the basic bricks for the lining of the converters has been discontinued in favor of a method of ramming the lime into the converters. An average analysis of the steel made is as follows, the high percentage of manganese being the most important feature:

Carbon	0.35 to 0.40
Sulphur	0.10
Silicon	0.06
Phosphorus	0.06
Manganese	0.75

The Manufacture of Finished Iron and Steel in France.

Most of the pig iron produced on the Continent is converted into finished iron for home use. England occupies an exceptional position as a producer of pig iron, in so far as a large quantity of that description of iron is sold to foreign customers for them to refine and manufacture into goods. Hence, in other iron-producing countries the production of finished iron is greater in proportion to that of pig iron than in England. It is so in France. It is not known what is the production of finished iron in England, but it is believed that if all the plant available in the United Kingdom were at work refining iron, it would only be capable of refining about one-half of our crude iron. But in recent years only about one-half of our refining plant has been in operation, and it is not known how regularly even that half was working. In 1877 it was estimated that the refining plant at work in this country was only capable of producing 1,800,000 tons of finished iron, which, as compared with a production of over 6,600,000 tons of crude iron, equals 28 per cent.; but if we add the production of steel to that of puddled iron, the total will amount to nearly 40 per cent. of the crude iron made. In France the statistics of the finished-iron trade are much fuller than in England, and this department of the iron trade there presents a marked contrast to its condition here. For instance, of the total production of pig iron in that country, more than 80 per cent. has generally been converted into finished iron and steel. In the years of the Franco-German war—1870–71—the production of finished iron, in proportion to that of crude iron, fell below that ratio, but in the most adverse year the ratio was over 60 per cent. Since then it has never risen to the same relative position as it occupied before; but that is owing to the increase in the production of steel in later years, and if we add the finished iron and steel together we find the balance restored. It is obvious, then, that the finished iron trade is no inconsiderable industry in France.

This industry is carried on in 31 departments, being 10 fewer than the number engaged in the production of pig iron. The finished iron trade in France is sometimes carried on in departments that produce no pig. Such is the case in the Aube, Cote d'Or, Haute-Garonne, Nièvre, Oise, Seine, Tarn, Yonne. These departments produce over 100,000 tons of finished iron, but no pig iron. The only departments, on the other hand, that produce pig iron, but no finished iron, are Ardèche, where, strange to say, the production last year was 100,659 tons; and the Rhone, which produced 72,000 tons. The former department is in the south of France, on the right bank of the Rhone, while most of the other departments named are in the north and center of France, lying west of the Meurthe-et-Moselle district, where the largest quantity of pig is is made. Not one-twelfth of the pig iron production of the Meurthe-et-Moselle is refined on the spot; and hence some of it is taken westward to the departments of Aube, Yonne, Cote d'Or, Nièvre, &c. The other two provinces, Haute Garonne and Tarn, that produce finished iron but no pigs, are contiguous to the Pyrenees ironmaking district, and their production is small. The department that is the largest producer of finished iron is the Nord, which usually makes more than one-fourth of the total production of France. Indeed, it makes more finished iron than pig iron, the quantity last year being 285,400 tons of the former and 237,500 tons of the latter. This is accounted for by the supply of fuel in that department, which contains the great northern coal field of France. It is in the Nord that most of the iron rails now made in France are produced. This branch of the finished iron trade is still carried on in ten departments, but the total production last year was only 42,000 tons, of which nearly 25,000 were made in the Nord.. In the production of iron plates, too, that department occupies the first place, but three other departments of the seventeen engaged in this branch of manufacture come close up to the production of the Nord. But no department approaches it in the production of merchant and profile irons. This branch of the trade manufactures 80 per cent. of the total finished iron production in France; and the Nord produces 32 per cent. of the total make of merchant and profile iron. The department that comes next in quantity is the Haute-Marne, with only about one-third of the production of the Nord. As all the departments engaged in the finished iron trade produce merchant and profile irons, most of them contribute from 10,000 to 30,000 tons each.

In the production of steel France occupies the same relative position as in that of finished or pig iron, but it has much fewer converters than any of the other great ironmakers. In 1879 she had only 24 converters, while Germany had 80 and England 104, but no country has since then made greater additions to its means of production. The great drawback to that industry in France, as in other Continental countries, has been the unsuitable character of the ores for the Bessemer converter, but French ironmasters showed great ingenuity in the skill with which they made the best of their limited resources. It was in France that the production and use of manganese in steel making were first carried on on a considerable scale. After the first efforts to produce it in Glasgow in large quantities came to an end, its manufacture was taken up and improved at Terrenoire, where its quality rapidly improved while its price fell. It was by the use of the ferromanganese that steel was made from French pigs. By its help, says Prof. Akerman, the French steel makers could, without danger of red-shortness, produce "a final product so poor in carbon that the injurious influence of phosphorus upon it became much less than it otherwise would have been. It was possible, without too great an increase in the content of carbon, to obtain in the final product a considerable content of manganese, which had the double advantage that the manganese appeared at the same time to counteract the injurious influence of phosphorus on the iron, and in some degree to increase its hardness. The result is that while in so simple an object as rails the quantity of phosphorus that could be permitted in an ingot steel with 0.5 to 0.6 per cent. of carbon was scarcely 0.1 per cent., these may now, with 0.2 to 0.3 per cent. carbon and 0.5 to 1.00 per cent. manganese, be as much as 0.2 to 0.3 per cent. phosphorus. For rolling rails containing so much phosphorus, there is required a more powerful rolling tram than for purer carbon steel rails, partly because the more phosphoriferous ingot metal requires a greater extension, in consequence of which the ingots must be larger, and partly because ingot metal containing an excess of phosphorus cannot bear to be heated to so high a temperature as the less phosphoriferous. Nevertheless, the product is, of course, inferior both through increased brittleness and diminished hardness, but it appears good enough for rails, at least in countries with a mild climate, and great are the advantages which the metallurgist has already been able to draw from this, not only in melting down and rerolling old iron rails, but also through its being possible to use at Bessemer works a somewhat more phosphoriferous pig than before." At the same time that manganese was being made in France with as much as 87 per cent. of that metal, and used in the conversion of phosphoriferous iron into steel, France began to use in considerable quantities the pure ores of Algeria, Spain and Elba; and now it gets about sufficient of these rich ores to produce all the steel made in French works.

Both in the production of finished iron and steel, France has been able to supply her own wants; but her requirements of that description appear, like her population, to have been almost stationary during the last 20 years. In 1865 there was as much finished iron produced and consumed in France as in 1878. If we look at the production of finished iron alone, it would appear that there has been a falling off in the recent years of commercial depression; but if we add the production of steel to that of finished iron we get a remarkably uniform consumption. The department that shows the greatest change in these materials is that of rails. In former years France generally made from 120,000 to 150,000 tons of iron rails; in 1867 she made 140,300 tons of iron and only 11,000 tons of steel rails. Since 1874, however, the reverse has been the case. In that year the production of steel rails rose from 64,000 to 102,000 tons, and the maximum production was reached last year, namely, 279,847 tons. The production of iron rails last year was 40,000 tons. In the manufacture of plate the change is not yet so great. The French navy was the first in Europe to adopt steel for shipbuilding, but shipbuilding is not so large an industry in that country as to cause a great demand for steel. Nevertheless, the production of steel plates last year was nearly one-sixth of the former total production; but last year was one of exceptional activity in that department, so much so that the production both in iron and steel was the greatest on record, yet steel only formed 13 per cent. of the whole. The following figures will give more detailed information as to the production in these departments since the Franco-German war, which temporarily interrupted the course of this industry:

	Total finished iron. Tons.	Iron plates Tons.	Total steel production. Tons.	Steel rails. Tons.
1871	635,876	85,700	76,454	22,513
1872	854,203	129,822	129,903	52,114
1873	890,911	129,523	155,568	64,097
1874	862,254	115,204	218,672	102,207
1875	904,990	118,663	249,592	120,660
1876	873,711	114,410	224,473	130,681
1877	755,960	110,695	221,817	136,549
1878	754,335	105,688	304,000	196,240
1879	857,062	136,872	327,260	253,742
1880	952,308	155,920	384,626	279,847

There is one department of the iron trade in which France excels—that is, the production of light castings. A part of the annual production of pig iron—usually about one-fourth—is remelted for the manufacture of castings of a better description than those made directly from the blast furnace; and the average value per ton of castings is generally one and a half that of castings made direct from the blast furnace. There are certain makes of French pig iron that are peculiarly suitable for that purpose. The French have also shown considerable skill in the manufacture of articles of galvanized iron. It was M. Sorel who in 1837 invented the galvanization of sheet iron by coating it

with a layer of zinc as a protection against atmospheric influences. The use of this iron has since become general, and its application for various purposes has usually been first made in France.

France has for many years been a considerable exporter of finished iron, and although the exports during the last year or two have not been so large as in former years, this may be owing to the increase in home consumption, for it has not been attended by any permanent increase in the total production worthy of notice. In former years France usually exported one-fifth or one-sixth of her total production of finished iron. The maximum was reached in 1872, when the quantity was 200,000 tons, out of a total supply of 950,000 tons, but in 1878 the exports fell to one-half that quantity. Last year they showed no increase, notwithstanding that the production in all departments was the largest on record. That production will doubtless be exceeded this year, for all accounts represent the existing works as fully employed and prices as remunerative. Moreover, large additions are being made to the means of production, especially in the steel trade, to which a fresh impetus has been given by the great extensions taking place in the railway system of France, and by the introduction of the basic process of dephosphorization, which, although not yet in general use, is being successfully applied to the production of steel from the phosphoriferous iron made in that country. Although the iron trade of France is continually represented as a decaying industry, in no other country in Europe does it appear to be in a more prosperous condition or to be experiencing greater expansion.—*Colliery Guardian.*

Statistics of the American Iron Trade in 1880.

BY JAMES M. SWANK.

(Continued.)

THE PRODUCTION OF PIG IRON IN 1880.

As has heretofore been the case, some of the anthracite furnaces used more or less coke in 1880 as a mixture, and a smaller number of bituminous furnaces used anthracite as a mixture. The exact quantity of pig iron produced in 1880 with this mixed fuel was 714,631 net tons. Counting all pig iron produced with mixed fuel as if it had been wholly made with the fuel chiefly used in the mixture, whether anthracite or bituminous coal, the quantity of pig iron smelted with anthracite coal, bituminous coal or charcoal from 1872 to 1880 was as follows, in net tons:

Year.	Fuel Used. Anthracite.	Bituminous.	Charcoal	Total.
1872	1,369,812	984,159	500,587	2,854,558
1873	1,312,754	977,904	577,020	2,868,278
1874	1,202,144	910,712	576,557	2,689,413
1875	938,040	947,545	410,990	2,266,581
1876	794,578	992,009	308,649	2,093,236
1877	934,797	1,061,945	317,843	2,314,585
1878	1,092,870	1,191,097	293,399	2,577,361
1879	1,273,024	1,438,998	358,873	3,070,875
1880	1,807,681	1,950,395	537,558	4,295,414

Of the total production of charcoal pig iron in 1880 (537,558 tons), Michigan produced the extraordinary quantity of 154,424 tons. No other State produced half as many tons of charcoal pig iron, Ohio approximating this quantity most closely with 69,190 tons.

The production of pig iron in 1880 in the pig iron producing States was as follows:

States.	Net tons.	States.	Net tons.
Pennsylvania	2,083,121	Virginia	29,934
Ohio	674,207	Georgia	27,321
New York	395,361	Connecticut	22,583
New Jersey	170,049	Massachusetts	19,017
Michigan	154,424	Indiana	12,500
Illinois	150,556	Oregon	5,000
Missouri	105,555	Maine	3,578
Wisconsin	96,842	Minnesota	3,520
Alabama	77,190	Texas	2,500
Tennessee	70,873	Vermont	1,800
West Virginia	70,138		
Maryland	61,437	Total	4,295,414
Kentucky	57,708		

There was a gratifying increase in 1880 in the production of spiegeleisen. The product was 19,603 net tons, against 13,931 tons in 1879, 10,674 tons in 1878, 8845 tons in 1877, 6616 tons in 1876, and 7832 tons in 1875. The product of 1879 and 1880 was made by the New Jersey Zinc Company and the Oxford Iron Company, in New Jersey, and by the Bethlehem Iron Company, the Cambria Iron Company, and the Edgar Thomson Steel Company, in Pennsylvania.

The stocks of domestic pig iron on hand and unsold in the hands of makers or their agents at the close of 1880 aggregated 456,658 net tons, against 141,674 tons in 1879, 574,565 tons in 1878, 642,351 tons in 1877, 686,798 tons in 1876, 760,908 tons in 1875, and 795,784 tons in 1874. The quantity of foreign pig iron in the warehouses of the country at the close of 1880 amounted to 164,404 gross tons, or 184,132 net tons. At the same time large quantities of foreign pig iron which had been withdrawn from warehouse were in the hands of importers, speculators, or creditors—probably 100,000 tons in all. The quantity of foreign pig iron now in warehouse or otherwise held in this country is less than in December last.

The consumption of pig iron in 1880 can only be approximated. We produced 3,835,191 gross tons, and imported the unusually large quantity of 700,864 tons, giving a total supply of 4,536,055 gross tons. We increased the stocks of domestic pig iron during the year the difference between 126,494 gross tons held at the close of 1879 and 407,730 gross tons held at the close of 1880, or 281,236 tons. At the close of 1880 there also remained in warehouse 164,404 gross tons of imported pig iron, and in the hands of speculators and others about 100,000 tons of imported pig iron. Adding the increase of domestic stocks to the foreign stocks we have 545,640 gross tons to be deducted from the total supply, which gives us 3,990,415 gross tons as the probable consumption of the year.

The year 1880 was a very active one in furnace construction in the United States. No less than 28 furnaces were built; 23 more were begun; 1 furnace long abandoned was revived; and many others were wholly or partly rebuilt or supplied with new and improved appliances to secure increased production and greater economy of fuel. Of the furnaces completed in 1880, there were 10 in Pennsylvania, 6 in Virginia, 2 in Alabama, 2 in Tennessee, 3 in Illinois, 2 in Michigan, and one each in Minnesota, Missouri, and Colorado. Of the additional furnaces which were in course of erection in 1880, there were 12 in Pennsylvania, 2 in Tennessee, 4 in Illinois, and one each in Virginia, Michigan, Missouri, California, and Washington Territory. During 1880 we marked off our list 17 furnaces which we regarded as having been abandoned. The total number of furnaces on our list at the close of 1880 was 701, against 697 at the close of 1879. The following figures represent the completed furnaces at the close of each of the last nine years.

1872	812	1877	716
1873	657	1878	692
1874	693	1879	697
1875	713	1880	701
1876	712		

Of the 701 completed furnaces at the close of 1880, there were 446 in blast, against 388 at the close of 1879, and 265 at the close of 1878. At the close of 1880 there were 255 furnaces out of blast, against 309 at the close of 1879, and 427 at the close of 1878. Of the furnaces in blast at the close of 1880, 140 were bituminous, 155 were anthracite, and 151 were charcoal—total, 446. Of the furnaces out of blast at the same time, 73 were bituminous, 71 were anthracite, and 111 were charcoal—total, 255. Of the whole number of furnaces at the close of 1880, 213 were classed as bituminous, 226 as anthracite, and 262 as charcoal—total, 701. The number of furnaces out of blast at the close of 1880 was still large, but it should be remembered that a number of furnaces always must be out of blast while undergoing repairs or waiting for fuel, while others are undesirably situated or are old-fashioned in construction and must eventually be abandoned.

PRODUCTION OF BESSEMER STEEL IN 1880.

The total quantity of Bessemer steel ingots produced in the United States in 1880 was 1,203,173 net tons, or 1,074,262 gross tons, against 928,972 net tons in 1879, 732,226 net tons in 1878, and 560,587 net tons in 1877. The increase over 1879 was 274,201 net tons, or 30 per cent.; over 1878 it was 470,947 net tons, or 64 per cent.; over 1877 it was 642,586 net tons, or 115 per cent. The production of Bessemer steel ingots in this country from 1872 to 1880 has been as follows in net tons:

Years.	Net tons.	Years.	Net tons.
1872	120,108	1877	560,587
1873	170,652	1878	732,226
1874	191,033	1879	928,972
1875	375,517	1880	1,203,173
1876	525,996		

The production of Bessemer steel rails in 1880 was 954,460 net tons, or 852,196 gross tons, against 683,964 net tons produced in 1879, 550,398 net tons in 1878, and 432,169 net tons in 1877. Of the whole quantity of Bessemer steel rails produced in 1880 there were rolled 36,868 net tons in iron rolling mills, mainly from imported blooms. The quantity of rails thus produced will be greater in 1881 than in 1880, but after this year we look for a sharp decline. The business was created by the exigencies arising from the sudden revival of a demand for steel rails in 1879.

The production of Bessemer steel rails in this country since 1867, when they were first made to fill orders, has been as follows:

Years.	Net tons.	Years.	Net tons.
1867	2,550	1874	144,954
1868	7,225	1875	290,863
1869	9,650	1876	412,461
1870	34,000	1877	432,184
1871	38,250	1878	550,398
1872	94,070	1879	683,964
1873	129,015	1880	954,460

The production of Bessemer steel ingots in 1880 was confined to 11 works. All of these were in constant operation during the year, with the exception of the Vulcan Works at St. Louis, which resumed operations March 10, 1880, and have since been steadily employed. The 11 works which were in operation in 1880 used 24 converters—the Bethlehem Works having four and all the others two each. The works of the Pittsburgh Bessemer Steel Company, Limited, located at Homestead, near Pittsburgh, were successfully started on March 19 of the present year. The Homestead Works have two converters. The whole number of converters in use in this country on the 1st of July of this year was 26. The probabilities are that the number and capacity of the Bessemer Works in the country will be so increased during this year that at its close their annual capacity will be fully 1,750,000 net tons of ingots. A production this year of 1,250,000 net tons of Bessemer steel rails, and next year of 1,500,000 net tons, is possible and probable.

Some preparations have been made to introduce into this country the Thomas-Gilchrist basic process for the manufacture of Bessemer steel, but we do not look for any practical results to follow for some time to come, and then at only two establishments.

Great Britain's production of Bessemer steel and its production of Bessemer steel rails in 1880 were both exceeded by the United States, as will appear from the following comparison, in gross tons:

Production of Bessemer steel ingots by the United States in 1880	1,074,262
Production of Bessemer steel ingots by Great Britain in 1880	1,044,382
Excess of production by the United States	29,880
Production of Bessemer steel rails by the United States in 1880	852,196
Production of Bessemer steel rails by Great Britain in 1880	739,910
Excess of production by the United States	112,286

PRODUCTION OF ALL KINDS OF STEEL IN 1880.

The production of crucible steel ingots in the United States in 1880 was 72,424 net tons, a gain of 15,644 tons upon the production of 56,780 tons in 1879. The production of blister and puddled steel, and of steel made by various minor processes, was 8465 net tons in 1880, against 5464 tons in 1879, 8556 tons in 1878, and 11,924 tons in 1877. The production of open-hearth steel ingots

Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of

PEN AND POCKET CUTLERY,

Solid Steel Scissors, Shears, Razors, &c.

Sole proprietors of the renowned full concave

"ELECTRIC RAZORS,"

And the celebrated **"ELECTRIC SHEARS."** Nickel Plated Bows.

Agents for the BENGALL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, Mo.

THE

LAMSON & GOODNOW MFG. CO.,

Salesroom and Warehouse, 88 Chambers Street, New York City.

Factories, Shelburne Falls, Mass.

Superior Cutlery of all kinds and grades, from the finest in pearl and ivory handles to the lowest price in wood and iron handles.

OUR

BUTCHERS' and HUNTERS' KNIVES

Are warranted to be equal in style, finish and quality, to any goods made in the world.

"COMPARE, THEN JUDGE."

We are the sole owners of the *Gardner Patent Guard and Rest for Carving Forks,* and the manufacture of fine carvers is with us a specialty.

AMERICAN MADE RAZORS

J. R. TORREY,

MANUFACTURER OF

STROPS

In all Styles.

J. R. TORREY RAZOR CO.,

MANUFACTURERS OF

RAZORS.

To introduce we offer **HOLLOW GROUND RAZORS** at $1.50, $1.75, $2; Ivory, $2.50. Our **SWEDISH GEM RAZORS,** $1.75, $2, $2.50; Ivory, $3. All our own make, and warranted the best cutters in the world. As Razor makers we know what is needed to sharpen a dull razor, and will mail for 75 cts. a Strop warranted to set a fine edge to any razor. If in morocco case, $1.

Factories at **WORCESTER, MASS.** Catalogues to the trade.

BRADFORD & ANTHONY, Boston Mass.,

ENGSTRÖM'S RAZORS.

THE BEST IN THE WORLD.

These **RAZORS** are esteemed in Europe as the best cutters made in the WORLD. The testimony that comes to us in regard to them is that **"in cutting quality there do not exist any Razors at all that can stand a comparison with those made by JOHAN ENGSTROM."**

Extreme care is used in their manufacture.

They are made of the BEST STEEL ATTAINABLE, every blade being hardened and tempered by **MR. ENGSTROM** himself by a secret chemical process which renders it impossible for any Razor not to be of the **Best Cutting Quality.**

They will be found to shave any beard growing on the human face.

N. B.—The high reputation won by these razors made by **ENGSTROM** *in SWEDEN has induced some English makers to imitate the form and stamp on the face of their blades the words "Swedish Razors," and other makers to imitate more closely Engstrom's style. To distinguish the genuine, see that they are stamped on the shank of the razor,* **JOHAN ENGSTROM.**

PRICES are $2.00, $2.50, $3.00, $3.50 each.

A SHOW CASE, containing one razor of each of the eight styles as samples, with a strop made expressly for Engstrom's Razors, will be mailed to any DEALER, on receipt of Post Office Money Order for $14.75, which covers all charges for packing and mailing.

Every RAZOR is fully WARRANTED by

BRADFORD & ANTHONY.

Wade & Butcher's,—Frederick Reynolds'—"Hamburg Ring"—"Bengall" Concaved,—George Wostenholm & Sons',—"Pipe,"—Joseph Rodgers & Sons'

RAZORS.

Supplied with BLANK RAZOR BLADES for Concaving.

RAZOR HANDLES, RAZOR HONES, &c., &c.

Agents for BADGER'S RAZOR STROPS.

CUTLERY.

Importers, Manufacturers' Agents and Wholesale Dealers in

American and Foreign Cutlery.

JOHN WILSON'S CELEBRATED

TRADE MARK.

"FOUR PEPPERCORNS AND A DIAMOND."

GRANTED A D 1766 BY THE CORPORATION OF CUTLERS OF SHEFFIELD AND PROTECTED BY ACT OF PARLIAMENT

REGISTERED ALSO AT WASHINGTON U.S.A. ACCORDING TO ACT OF CONGRESS

ALSO AT LEIPZIG, IN ACCORDANCE WITH THE GERMAN TRADE MARKS' REGISTRATION ACT.

BUTCHERS' KNIVES, BUTCHERS' STEELS, AND SHOE KNIVES.

It having come to the knowledge of JOHN WILSON that Counterfeit Butchers' Knives, purporting to be of his manufacture, are being sold in the United States, he hereby cautions all purchasers of his Knives and Steels to be on the alert against such imposition.

JOHN WILSON also hereby gives Notice, that it is his determination to institute Legal Proceedings against any person or persons who may be detected infringing his Trade Mark.

Every article of JOHN WILSON'S manufacture, bears the Trade Mark, in addition to the Name.

WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 175[illegible]

Unrivaled **SHEARS,** Solid Steel **SICSSORS,** Japanned and Nickled

Manufactured of imported **English Cast Steel.**

Every Pair Warranted.

For samples and prices address,

GIFFORD MANUFACTURING CO.,

Union City, Conn.

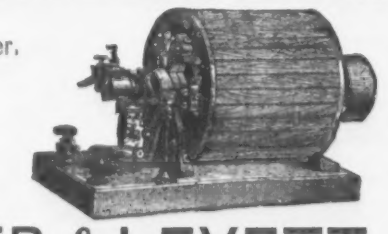
The American Dynamo-Electric Machine,

For Electro-Plating, Electrotyping, &c.

Requires no Water.

Combining all the Latest Improvements.

Cannot Reverse Current.



ZUCKER & LEVETT, Genl. Agents,

Manufacturers and Importers of NICKEL PLATERS' SUPPLIES.

510, 512 & 514 WEST 16TH STREET, N. Y.

Cutlery.

ALFRED H. HILDICK,

No. 11 Murray St., N. Y.,

Importer of **CHAINS, ANVILS, VISES, &c.**

Agency of

HILL BROTHERS & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of

BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.

CORPORATE MARK,

Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

F. & W. CLATWORTHY, Agents.

The demand for **Joseph Rodgers & Sons'** productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

P. O. Box 3962.

ESTABLISHED 1836.

Alfred Field & Co.,

COMMISSION MERCHANTS,

New York, Birmingham, Sheffield, Liverpool.

Guns and Pocket Cutlery,

SPECIALTIES.

Headquarters for

ELEYS BROS.' GOODS, WRIGHT'S ANVILS,
WILSON'S BUTCHER KNIVES, &c.
WOSTENHOLM'S POCKET CUTLERY AND RAZORS.
FIELD, FRASER & CONTINENTAL POCKET KNIVES,
BUTCHER'S FILES, TOOLS AND RAZORS,
JOSEPH ELLIOTT'S CELEBRATED RAZORS,
WESTERN FILE CO.'S FILES,
ENGLISH AND GERMAN GUNS,
ROBERT SORBY & SONS' SHEEP SHEARS,
STUBS' FILES, WESTERN FILES,
GREAVES' SHEEP SHEARS,
CHESTERMAN'S TAPES,
GERMAN COIL AND HALTERS and other CHAINS,
BRADES' TROWELS AND HOES,
CANASTOTA KNIFE CO.'S POCKET KNIVES.
Etc., Etc., Etc., Etc.

All sorts of Hardware and Merchandise for import and export purchased on commission.

ROBERT SORBY & SONS,

SHEFFIELD,

MANUFACTURERS OF THE CELEBRATED

Kangaroo Sheep Shears.

The best Shears made.

Every Shears Guaranteed.

ALFRED FIELD & CO.,

93 Chambers St., - NEW YORK,

SOLE AGENTS.

Send for price list and terms.

FURNESS, BANNISTER & CO.,

NEWARK, N. J.

Manufacturers of

TABLE CUTLERY,

PRICES FURNISHED ON APPLICATION.

Cutlery.

McCOY & SANDERS,

Hardware, Cutlery, &c.,

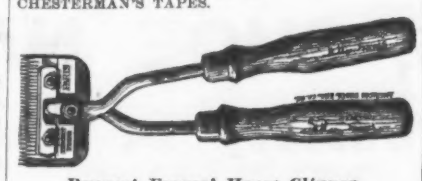
P. O. BOX 390, NEW YORK.

Sole Agents for

THEILE & QUACK'S CELEBRATED CUTLERY.
WADE BROS.' AND TYLER & CO.'S CUTLERY.
IRVING CUTLERY CO.
ELMWOOD CUTLERY CO.
SHEARS, MIDDLETOWN SHEAR CO.
WROUGHT IRON TACKLE BLOCKS.
EADES' DIFFERENTIAL PULLEYS.
PEUGEOT FRERES' FRENCH HORSE CLIPPERS.

SPECIALTIES.

WOSTENHOLM'S POCKET CUTLERY AND RAZORS.
WADE & BUTCHER'S RAZORS.
BENGAL AND GENUINE HAMBURG HOLLOW GROUND RAZORS.
JOS. RODGERS & SONS' CUTLERY.
GERMAN COIL AND HALTER CHAINS.
PLYERS, NIPPERS AND TOOLS.
CHESTERMAN'S TAPES.



Peugeot Freres' Horse Clipper.

Silver Medal, 1878—Paris.

JOHN SPENCER & SON,

Albion Steel Works, Sheffield,

MANUFACTURERS OF

FILES

AND

STEEL,

Table Knives, Razors, Shovels, &c., &c., of every description.

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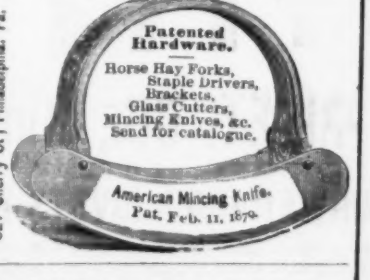
SPENCER SHEFFIELD

Granted 1749.

PHILA NOVELTY MANUFACTURING CO. 821 Cherry St., Philadelphia, Pa.



TELESCOPE TUBES.

Fine Mandrel-drawn Tubes, from Brass or German Silver. Tubes for sliding one within the other made to order. Manufactured by ROBT. T. DEAKIN & CO., 500 N. 12th St., Philadelphia, makers of the American Improved Brass Garden Syringe

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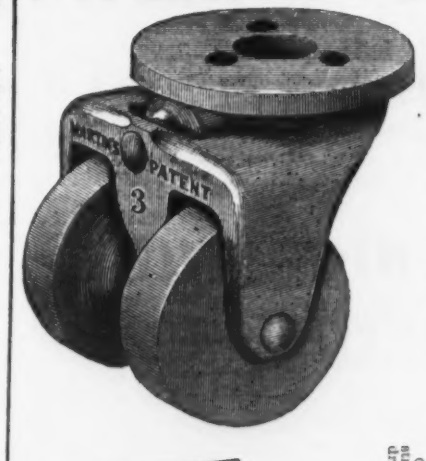
Office of

PHŒNIX CASTER CO.,

Indianapolis, Ind.



Hibbard, Spencer & Co., Chicago, have sold our Casters as follows:

1879	$322.60
1880	590.92
1881 (year half out only)	823.54

We have just issued a new Catalogue, which we would be pleased to mail with terms upon application.

PHŒNIX CASTER CO.,

Manufacturers,

INDIANAPOLIS, IND.

Our Drawer is so uniform, simple, strong and effective, that it has nearly driven all competition from the field.

Elizabethport Steam Cordage Co.,

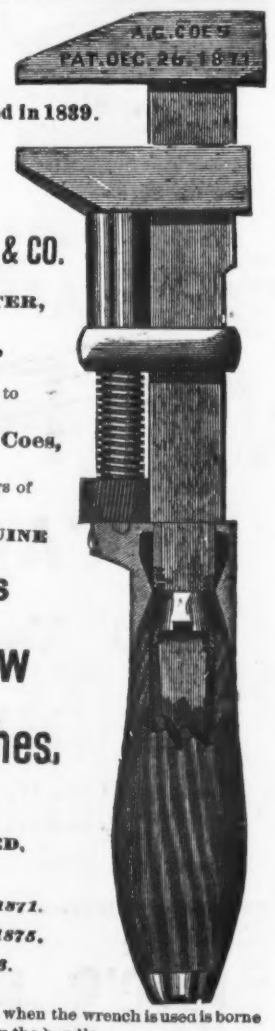
MANUFACTURERS OF MANILA, SISAL AND TARRED

CORDAGE OF ALL KINDS.

BINDER TWINE A SPECIALTY.

E. M. FULTON.
D. B. WHITLOCK.
A. W. LUKENS.

46 South Street, New York.



Established in 1839.

A. G. COES & CO.

WORCESTER,

MASS.,

Successors to

L. & A. G. Coes,

Manufacturers of

THE GENUINE

COES

Screw

Wrenches.

PATENTED,

May 9, 1871.
December 26, 1871.
December 28, 1875.
August 1, 1876.

The backstrain when the wrench is used is borne by the bar—not by the handle.

The strongest Wrench made, and the only successful Re-enforced Bar.

None genuine unless stamped

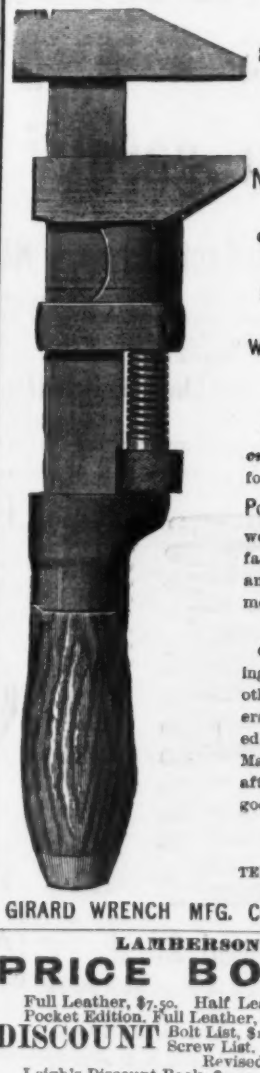
A. G. COES & CO.,

Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

TRADE MARK.

STANDARD GIRARD WRENCH.

WARRANTED.



FOR **STRENGTH** AND **Durability** IT HAS **NO SUPERIOR.**

GUARANTEED IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the ***increased demand*** for these justly **Popular Wrenches,** we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR TERMS and PRICES

GIRARD WRENCH MFG. CO., Girard, Pa.

LAMBERSON'S

PRICE BOOKS.

DISCOUNT

Full Leather, $7.50. Half Leather, $6.50.
Pocket Edition. Full Leather, $3.50.
Bolt List, $1.00.
Screw List, 50 cents.
Revised April 27, 1881.
Leigh's Discount Book, $1.00.

Address all orders to *Pope & Stevens,* General Agents, 114 Chambers Street, N. Y.

For sale at publisher's prices by Wm. Blair & Co., Chicago; A. F. Shapleigh and Cantrell Hardware Co., St. Louis C. B. James, Detroit.

GEO. H. CREED,

SHIP CHANDLERY,

103 Reade Street, New York.

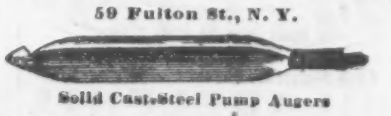
Manufacturers of and Wholesale Dealers in

Cotton and "Long Flax" Sail Duck, Cotton and Linen Ravens,

Creed's Patent Ships' Clews. Heitman's Wire Rope Splicers. Agent for Raymond's American Crane Oil for lubricating Cylinders and Valves.

CHAS. E. LITTLE,

59 Fulton St., N. Y.



Solid Cast-Steel Pump Augers

For Boring Pump Logs and Pump Tubing, with all necessary fittings. Agency for **Barnes' Wood-Working Machinery and Lathes.**

in 1880 was 112,953 net tons, against 56,290 tons in 1879, 36,126 tons in 1878, and 25,031 tons in 1877.

The following table gives the production of crucible steel ingots from 1874 to 1880, in net tons:

Year.	New England.	New York.	New Jersey.	Pennsylvania.	Western States.	Southern States.	Total.
1874.....	1,509	2,696	8,164	23,289	570	100	36,328
1875.....	1,620	2,300	7,098	26,615	1,500	268	39,401
1876.....	1,098	2,300	6,806	28,217	700	261	39,382
1877.....	1,974	2,032	6,749	27,983	1,400	292	40,430
1878.....	1,602	2,800	7,377	30,585	280	62	42,906
1879.....	1,608	2,300	8,551	43,514	605	2	56,780
1880.....	660	3,500	10,387	57,077	800	....	72,424

The following table gives the production of open-hearth steel ingots from 1874 to 1880, in net tons.

States.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
N. Eng..	5,300	3,010	6,085	6,652	8,228	14,660	20,650
N. J. and Penn..	1,700	4,240	7,547	7,771	12,231	19,575	50,736
Wst'rn & S'thern States.	....	1,800	7,858	10,608	15,667	22,055	41,657
Total.	7,000	9,050	21,490	25,031	36,126	56,290	112,953

PRODUCTION OF BARS, ANGLES, PLATES, SHEETS AND OTHER ROLLED IRON IN 1880.

By the term rolled iron we include (1) cut nails and spikes; (2) bar, angle, bolt, rod, skelp and hoop iron; (3) plate and sheet iron; and (4) all sizes of iron rails. Bessemer steel rails are not classed among rolled iron products. The production of all kinds of rolled iron in the United States in 1880, including iron rails, was 2,332,668 net tons, which was an increase of 285,184 tons over the production of 2,247,484 tons in 1879. In 1879 the production was 491,908 tons more than that of 1878. The increase in production in 1880 was, therefore, very much less than in 1879. The explanation doubtless is that in the last half of 1879, when the "boom" was in full force, large stocks of merchant iron were piled up in warehouses and were not sold until 1880.

The following table gives the production of all kinds of rolled iron from 1864 to 1880, in net tons.

Years.	Iron rails.	Other rolled iron.	Total.
1864.....	335,369	536,958	872,327
1865.....	356,292	500,048	856,340
1866.....	430,778	595,311	1,026,089
1867.....	459,558	579,838	1,039,396
1868.....	499,489	598,286	1,097,775
1869.....	583,936	642,420	1,226,356
1870.....	586,000	705,000	1,291,000
1871.....	737,483	710,000	1,447,483
1872.....	905,930	947,992	1,847,922
1873.....	761,062	1,076,368	1,837,430
1874.....	584,469	1,110,147	1,694,616
1875.....	501,649	1,097,837	1,599,516
1876.....	467,168	1,042,101	1,509,269
1877.....	332,540	1,144,219	1,476,759
1878.....	320,890	1,232,686	1,555,576
1879.....	420,160	1,627,324	2,047,484
1880.....	493,762	1,838,906	2,332,668

PRODUCTION OF ROLLED IRON (EXCLUDING RAILS AND NAIL PLATE) IN THE UNITED STATES IN 1879 AND 1880.

States.	Bar, Angle, Bolt, Rod, Skelp and Hoop Iron. Net tons.		Plate and Sheet Iron, not including Nail Plate. Net tons.	
	1879.	1880.	1879.	1880.
Maine.....	6,162	7,639	.....	.....
N. Hampshire.	3,000	3,000	.....	100
Massachusetts.	55,128	48,323	20,730	29,640
Rhode Island..	9,800	7,032	.....	.....
Connecticut...	13,486	16,046	.....	.....
New York.....	87,422	106,274	.....	2,062
New Jersey....	46,522	48,905	1,600	921
Pennsylvania..	543,566	551,302	178,477	223,940
Delaware.....	17,427	19,300	9,496	10,506
Maryland.....	9,590	19,400	13,335	14,645
Dis. of Col....	206	265	24	21
Virginia.....	24,025	31,441	.....	.....
Georgia.....	2,433	1,022	.....	.....
Alabama.....	1,000	6,304	.....	.....
W. Virginia....	4,518	4,638	5,300	5,550
Kentucky.....	22,112	20,677	8,480	10,348
Tennessee.....	6,557	6,215	.....	.....
Ohio.....	132,028	182,677	24,280	33,826
Indiana.....	19,739	17,908	1,325	6,500
Illinois.....	30,203	33,647	.....	.....
Michigan.....	8,526	12,539	3,750	7,265
Wisconsin.....	30,443	34,683	.....	.....
Missouri.....	19,125	20,942	2,971	4,343
California.....	9,016	10,555	.....	.....
Kansas.....	4,229	8,900	.....	.....
Wyoming Ter..	.....	400	.....	.....
Total.....	1,107,005	1,220,724	269,768	349,657

PRODUCTION OF CUT NAILS AND SPIKES.—KEGS OF 100 POUNDS.

States.	1878.	1879.	1880.
Maine.....	.....	.....	.....
Massachusetts....	476,863	430,240	532,299
Rhode Island.....	.....	.....	.....
New York.....	46,470	10,100	7,482
New Jersey.....	254,453	294,182	294,122
Pennsylvania.....	1,349,714	1,386,925	1,737,500
Virginia.....	127,970	130,076	123,728
Georgia.....	.....	.....	.....
West Virginia.....	890,140	1,083,897	1,025,155
Kentucky.....	80,000	161,800	120,900
Tennessee.....	64,191	104,039	64,503
Ohio.....	610,245	794,230	824,683
Indiana.....	277,860	294,695	289,948
Illinois.....	218,224	301,837	290,132
Nebraska.....	.....	10,000	60,000
Total.....	4,396,130	5,021,021	5,370,512

The production of cut nails and cut spikes in 1879 was 614,891 kegs greater than in 1878, but in 1880 it was only 359,491 kegs greater than in 1879. In 1879 there was an over-production, which prevented as great an increase in the make of 1880 over 1879 as there had been in 1879 over that of 1878.

Why the Chinese Students Go.—Young Wi Chaing, the Assistant Commissioner of Education, will start for China on Monday with another party of Chinese students, numbering 40. It is said also that, in September, Commissioner Woo will return with the rest, and the establishment at Hartford will be closed up and deserted. Young Wi Chaing thinks his government will eventually send on another lot of boys to be educated. He denies that his government is removing the students because they are becoming Americanized, but he says that the boys came here when about 10 years old, and now have grown up till they all range from 19 to 21 years of age, and it is time that some use was being made of them. They will all be put to work on the new telegraph line from Pekin to Tien-Tsin. Some of them who have been here since they were 10 years old, have forgotten their own language to such an extent that they can with difficulty carry on a conversation in it. He says, further, that the Chinese government has decided to adopt a military system modeled after West Point, and it will be located at Tien-Tsin.

INDUSTRIAL ITEMS.

MASSACHUSETTS.

The Deane Steam Pump Company, Holyoke, are doing a heavy business, and the mill has been running nights to keep up with orders. They run largely on vertical pumps for artesian wells.

The Seymour Cutlery Company at Holyoke, are turning out 100 dozen of shears a day and are behind their orders.

CONNECTICUT.

The works of the Bridgeport Brass Company, in East Bridgeport, are being enlarged by an addition 80 feet long and three stories high.

Messrs. Coulter & McKenzie, of Bridgeport, are having large orders from the South and West for carriage spring machinery.

At New Haven a joint stock company is to be formed, under the title of the Yale Manufacturing Company, for the manufacture of burglar and fire-proof safes and vaults. Work on a brick factory 100 feet square has already been begun.

NEW JERSEY.

Twenty-five finished locomotives have been shipped from Paterson within a month. The Rogers Works employ 1580 men; the Danforth Works 900, and the Grant Works about 800.

Romer & Co., Newark, are very busy, with a force of 150 men, in filling a large contract that they recently received from the United States Navy for their patent handcuffs. They are also at work on large orders for their Scandinavian or jail locks, coach lamps and lanterns, and have been compelled of late to work nights.

PENNSYLVANIA.

The Gaysport Foundry and Machine Shop in Hollidaysburg, owned by McLanahan, Stone & Co., was totally destroyed by fire on the morning of the 18th.

Mr. Jerome L. Boyer has accepted the present management of the Chestnut Hill Iron Ore Company at Columbia; main office, 52 Wall street, New York. He will have entire charge of their three blast furnaces, the Chestnut Hill Mines, Bachman Valley Railroad and mines in Maryland, &c. The Company has the Shawnee Rolling Mill, Foundry and Machine Shops, also located at Columbia. Moses Taylor, John Pyne and Benjamin Clark, of New York, Samuel Thomas, of Catasauqua, and Mr. Boyer, of Reading, are the sole proprietors of these extensive works.—*Reading Eagle.*

The Phœnix Iron Company have been running single turn for the past year, but owing to the great amount of work now on hand the company propose to start a double turn.

The pipe mill and machine shop of the Reading Iron Works, at Reading, were burned early on the moring of the 18th. Loss $20,000.

The Cleveland Rolling Mill Company will have 100 of their new coke ovens fired by September 1st.

Three hundred and thirty-eight tons of pig iron were manufactured at the furnace of the Warwick Iron Company for the week ending Saturday, August 13.

PITTSBURGH AND VICINITY.

H. Lloyd, Son & Co., of the Kensington Iron Works, have lately been making some experiments with a patent furnace, but are not yet ready to give any definite information.

All departments of Oliver Bros. & Phillips' mill and machine shops are running double turn.

The old building of the Iron City Boiler Works have become too small for the increased business of the company.

The Empire Plow Works have started up again and are running full blast.

OHIO.

T. P. Ogden, Columbus, who has succeeded to H. R. Smith & Co.'s works, is going extensively into the business of manufacturing cast iron, water and gas pipe branch, and special castings. He employs 70 hands.

The Revolving Scraper Company, Columbus, report the heaviest trade this season of any year since they have been in business. They have sold more of their steel scrapers and wheelbarrows each month in this year than in any six months heretofore. During the present season they have sold nearly 20,000 steel scrapers in this country and in Europe. At this time their works in every department are running to their fullest capacity, with many orders yet to fill.

ILLINOIS.

The Illinois Iron and Bolt Co., at Carpenterville, are erecting an addition to their foundry, 66 x 112, which will increase their foundry capacity 50 per cent. They are also putting in a new water wheel.

The Chicago Tire and Spring Works were incorporated during the past week, with a capital stock of $200,000 and the following incorporators: Frederick M. Atkinson, M. P. Hayes and James H. Torgo.

The Power Producing Co., of Chicago, is the name of a new enterprise incorporated with a capital stock of $230,000. The following gentlemen are incorporators: Myron G. Chappell, Ira L. Willetts and Horatio Wheeler.

KENTUCKY.

B. F. Avery & Sons, plow manufacturers, of Louisville, are building a large addition to their works.

The Lithgow Mfg. Co., of Louisville, are increasing their capacity by the erection of a large addition to their stove and mantel works.

ALABAMA.

The Birmingham Coal, Coke and Iron Company, with a capital stock of $2,000,000, was organized at Decatur on the 12th inst. J. C. Neely, of Memphis, Tenn., was elected president, and Thomas H. Milburn, of the same city, was made secretary and treasurer. The company have purchased 50,000 acres of coal and iron land near Birmingham, and contemplate erecting several large furnaces in a short time.

WISCONSIN.

The Iron Mountain Furnace Company, of Ironton, has just been formed, with a capital of $500,000.

MICHIGAN.

The following table exhibits, in gross tons,

the total lake shipments of iron ore the present season, up to and including Aug. 10, together with the amount shipped during the corresponding period last year:

Where from.	1880.	1881.
Escanaba	625,262	730,196
Marquette	372,846	339,523
L'Anse	29,760	29,099
Total	1,027,868	1,097,818

An increase of 69,950 gross tons.—*Marquette Mining Journal.*

Utilizing Niagara.

We take the following from the address of Mr. F. R. Delano before the Bankers' Convention.

The power of the steam engine, as developed by Watt and Fulton, threatened, for a time, to prove that the power of water was of little value, except as it was converted into steam for driving the new motors. But this illusion, in the end, was dispelled by the peculiar necessities of the people of the United States, and the peculiar condition of their new and undeveloped country. The new comers found their new land covered with a dense forest, which must be removed before they could raise the supplies necessary to support life. The exigencies of the climate, and the denizens, tame and wild, of the forest, precluded the occupancy of tents, and required a more substantial protection. So the log cabin became the tent of the pilgrims and their descendants. The saw mill was the first necessity. The land was full of deep lakes and living streams, and it was built, to be soon followed by the grist mill, the schoolhouse and the church. To these, in due time, were added the various manufactories necessary to the comfort and convenience of civilized men. The rapid increase in population, by natural growth and by immigration, and the equally rapid accumulation of wealth, produced a demand for more abundant and more varied products. New enterprises sprang up on every hand. Every considerable stream was dammed and its power utilized. Every water-power was thought to be the germinal nucleus of a new city, and every new city must have all the modern improvements. Hence, it came to pass that the United States became the paradise of water-powers, and the simple turbine of Fourneyron, that utilized 40 or 50 per cent of the water used, grew into the more perfect designs of Swain, Boyden and others, which utilized from 80 to 85 per cent of it. Hence it is that we are soon to see a development of this peculiar power at Niagara, which will stand unrivaled among motors of its class in the world. There will be three turbines, 4 feet in diameter, with 80 feet of head, fed by a tube 7 feet in diameter, each turbine giving 1000 horse-power, with the whole power of the great lakes and the Niagara River to reinforce them. It anything should produce catastrophism here we might expect to have a stunning demonstration of the effect produced, when an irresistible force strikes an immovable body. The experiment of using so great a head in turbines of such unusual dimensions will be watched by mechanical engineers with much interest. As may be inferred from what has already been said, the extraordinary development of water-power for economic purposes is an American idea. In no other country has it been so extensively and so successfully utilized. This will be apparent by considering some of the rivers which have been dammed for the benefit of mankind, and the force which they furnish reduced to the standard of horse-power: The Passaic, at Paterson, N. J., 1000 horse-power; the Merrimac, at Lowell, 10,000; the Mohawk, at Cohoes, 14,000; the Connecticut, at Hadley, 17,000; the Androscoggin, at Lewiston, 11,000; the Housatonic, at Canaan Falls, 3000; the Mississippi, at the Falls of St. Anthony, 16,000; the Oswego, at Oswego, 4000. The sum total of these is 75,000 horse-power, as estimated at a given point on each river. But this is used over again on an average not less than three times. This would show a larger total of 225,000 horse-power. There are also very many smaller streams in all the hill sections of the country which are utilized, and may furnish an aggregate, used and unused, equal to the last named total of 225,000—thus giving a grand total of nearly 500,000 horse-power, distributed over a wide extent of country, and supplying in their way the wants of 50 millions of people.

But these are only the minor powers, so to speak, of the hills and valleys. The grand dominating power that could absorb them all, and still have room to give hospitable refuge to four times as many, remains to be noticed. It is the Niagara River. From data furnished by the United States Lake Survey Bureau, in 1875, it appears that the average flow of the river above the falls is 10,000,000 cubic feet per minute. Converting this into horse-power under a head of 200 feet, we have a grand aggregate of 3,000,000 horse-power, a mighty force that would supply the economic wants of 200,000,000 people.

In this connection it may not be inappropriate to mention a plan which was matured some years since for establishing a second Manchester in the County of Niagara. It was known as the Niagara ship canal project, and was the revival of a similar one which had been entertained some years before, and for which a survey had been made, by authority of the War Department, by the United States topographical engineers under the charge of Capt. G. Williams. In 1853, Mr. G. W. Holley, then a member of the Legislature from Niagara, and to whom the speaker is indebted for valuable assistance in the preparation of this address, presented a bill, which was passed, authorizing the construction of a ship canal from some point of the river above the falls into the river below them, or into Lake Ontario. The reports to the Canadian authorities of the operations of the Welland Canal for some years previous to that date, showed that three-fourths of the business of that canal was done by Americans, and there was a strong desire manifested that a ship canal should be constructed on the American side of the river, which would be much shorter and more safely navigated than the long Welland Canal. The idea was so favorably received and supported by individual capitalists and by friends and officers of the government, especially by Congressional representatives in the United States Congress from the Western and Northwestern States, that a bill, with liberal provisions, authorizing the work, was passed by a large majority of both branches of the Legislature of the State of New York. There was also a reasonable prospect that a donation of public land would be made in aid of the project.

German Emigration to the United States.

Regarding German emigration to the United States, Consul Lincoln, of Stettin, writes: "Judging from the inquiries made at this office and from information derived from the newspapers, the number of those seeking and desiring to find homes in our land is decidedly on the increase. I am pleased to be able to further record that many of the persons leaving this country at the present time are possessed of considerable means, and appear to be of a class likely to become a desirable addition to our population. The authorities seem to be somewhat alarmed at the unprecedented extent of the present exodus. In consequence thereof, the President of the Province of Posen has recently issued a mandate to the police officials to keep a strict watch over the movements of all emigrant agents."

Discussing the same subject, Consul Wilson, of Hamburg, says: "Having applied to the local authorities for a statement of the number of emigrants who left this port for our country during the first three months of the last year and the first quarter of 1881, ending the 31st ult., I am officially informed that in the first three months of 1880 the number reached the, until then, unprecedented figure of 7707, while for the same quarter of this year there were 24,401! From the officers of the steamships conveying these people, the emigrant commissioners and others whose business brings them into close contact with this class, as well as from my own personal observation, I learn that the present emigrants from this country to the United States are largely made up of the middle classes and the most hardy and ambitious of the German peasantry. There is evidently a greater percentage of skilled laborers, mechanics and others of the producing class, such as muscular young men and women accustomed to farm and other outdoor work. Then, again, it is noticeable that there is a larger percentage than usual of scientific men and others of the educated classes, and it is remarked that the emigrants have better outfits than formerly, and scarcely any of them are without some ready cash. Notwithstanding the tremendous impetus that has been given to emigration during the past year or two, it is reported that tens of thousands of small property owners are ready and anxious to go, and would emigrate at once could they dispose of their interests here at anything like reasonable figures. There are many reasons which might be given for this extraordinary movement, prominent among which may be mentioned the military requirements and heavy taxation, the climate and worn-out condition of the farming lands, and, above all, the official reports coming from the United States showing our marvelous development and brilliant future prospects."

Prospects of the Corn Crop.—The August estimates of the Department of Agriculture confirm the expectations of an important decrease in the crop of Indian corn. The department estimates that the yield will fall 372,750,000 bushels below that of 1880; which would give a crop of 1,164,780,000 bushels, against 1,537,500,000 last year. The report intimates that "continued bad weather will increase this deficit;" but it does not add, what is equally true, that favorable weather for the next 60 days may diminish this shortage. It is, therefore, premature to conclude that the crop will be 25 per cent. short of that of 1880. Should there, however, be no improvement upon the present unflattering prospect, the crop will be the smallest since 1874, as will appear from the following department estimates of the crops of the last seven years:

	Bushels.
1880	1,537,500,000
1879	1,547,900,000
1878	1,388,200,000
1877	1,142,500,000
1876	1,283,800,000
1875	1,321,000,000
1874	850,200,000

In some States, the plant has been so completely ruined that no possible weather could restore its lost growth; and therefore, in the event of the future weather being all that could be desired, we could not expect the crop to equal that of last year. Under the best future conditions that could be hoped for, the shortage may be expected to largely exceed the entire quantity of last year's export. The supply available for domestic use will therefore be deficient, and the consequent probable advance in price may prove unfavorable to the hog crop, which is always largely dependent on the cheapness of corn.

In the department of cotton machinery at the Altoona Exposition, a grand prize of $500, or a piece of plate of that value, is offered for the most valuable new improvement for preparing or manufacturing cotton. Another of $200 is offered for the best arrangement for receiving seed cotton, keeping it clean and separate, carrying it through the process of cleaning, and for the separate delivery of the seed to the owner as he may desire it. Another of the same value will be awarded for the best practical invention for preparing for ginning storm-beaten cotton to which large fragments of boll and stalk have adhered.

Classification of California Industries.—A general classification of the population of the State of California as to industries, according to the San Francisco *Chronicle*, is about as follows:

Commercial towns	268,609
Agricultural towns	92,017
Mining towns	30,701
Mixed industries	45,914
Farm, mine and hamlet	427,445
Total	864,686

The Iron Age

AND

Metallurgical Review.

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CONTENTS.

Postmaster-General James is a strong advocate of reciprocity between Canada and the United States. He sees no reason why the mail bags used in effecting the exchange of mails between the respective departments cannot be returned reciprocally, as in the case of mail bags similarly used in the intercourse with other countries. He incloses, for the information of the Canadian authorities, an abstract of reports, showing that 119 United States sacks containing Canadian mails were received at two railway post-offices from the 1st to the 13th inst.

The Purchasing Power of Money in England and the United States.

In a recent discussion of the relative position of American and foreign labor, the Philadelphia *Record* makes the following statement: "In comparing the wages paid "to American workingmen with those paid "abroad, it should be borne in mind that "the purchasing power of money is consid- "erably less here than the average in for- "eign countries." Just what the *Record* means by this is not plain. If it means that the methods of living abroad are so different from ours—that what is the common food of our workmen, is in many cases, luxuries seldom or never used by the workmen abroad, and that therefore the workmen live on less money per year—the *Record* is correct. If, however, the words "purchasing power of money" means what they are usually taken to mean, namely, what a dollar or its equivalent will buy of any given article of a certain grade, the statement is very far from correct. We know that the idea has got into the heads of a great many people in this country that a dollar or its equivalent will purchase more in England, for example, than it will here. It is the doctrine of free traders and others, who assume that what they think they can reason out as true, but those who take facts as they are, know that it is not true. One dollar or its equivalent will buy more tea, more coffee, more flour, more meat, more fuel, more shirtings, more calico in this country than in England. The only important exception to the rule, so far as the expenditure for living is concerned, is that of rent. House rent is about twice as great in this country as in England, but in everything else one dollar will purchase more of the necessaries of life here than in England. We assert this as the result of a careful, painstaking investigation. The statement is borne out by the statistics showing the immense amount of food in various forms that England is taking from us—wheat, flour, apples, meats—fresh, corned and canned—canned vegetables, provisions, &c., all of which are sold in England at a profit, after paying freight, and sold at a less rate than England can produce them.

The question may be asked, Does not the high price of rent more than overbalance any advantage that may be had in provisions? Statistics gathered by the Massachusetts Bureau of Labor show that rent in Massachusetts is from 15 to 20 per cent. of the expenditures of workingmen's families. The table of Col. Wright on this subject of expenditures is worth reproducing:

PERCENTAGE OF EXPENDITURE AS REGARDS INCOME.

Items of Expenditure.	From $300 to $450.	From $450 to $600.	From $600 to $750.	From $750 to $1200.	Above $1200.
	Percentage of the expenditure of a family of a workingman with an income.				
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Substistence.....	64	63	60	56	51
Clothing.....	7	10.5	7	15	19
Rent.....	20	15.5	14	17	15
Fuel.....	6	6	6	6	5
Sundry expenses...	3	5	6	6	10
Total.....	100	100	100	100	100

Taking the average percentage of the expenditure for rent, in these tables as 17 per cent., and allow that the English workman gets his rent at one-half what it costs the American, it would follow that the English workman would have in this item 8½ per cent. advantage, but in everything else he is at a disadvantage. Flour costs from 25 to 33⅓ per cent. more; cheese, 80 per cent. more; fuel, on an average, 20 per cent. more; ham, 30 to 50 per cent. more; beef, 20 to 30 per cent. more, and other necessities in proportion. As the largest part of the expenditure of any family is for subsistence—that is, groceries and provisions—and as these are uniformly higher in England than with us, it is evident that the purchasing power of money is not "considerably less" here than in England.

On the Continent the conditions are not materially different from those noted in the case of England. The Continental workingman lives on much less than the American workingman, but he lives in much simpler fashion, and habitually denies himself many things which the American workingman considers necessary for himself and his family. United States Consul Potter, at Crefeld, Germany, sends the State Department some interesting figures of wages and the cost of living in the district in which he is located. The average daily wages of carpenters and joiners, as ascertained by him, are about 60 cents; plasterers, 85 cents; locksmiths, 60 cents; journeymen tailors, 38 cents, and boot and shoe makers, 38 cents. The average wages of skilled workmen and mechanics of all kinds for eleven hours' labor is 55 cents. Common laborers and farm hands earn about 48 cents a day. From the tables of market prices of flour, butter, eggs, potatoes, beef, pork and milk which Consul Potter has prepared, the cost of living in the German cities where he gleaned his facts would seem to be not much less than in the United States. Flour is quoted $8 a barrel; butter, 25 cents a pound; beef, 13 to 16 cents a pound; pork, 15 cents; bacon, 16 cents, and milk, 5 cents a quart. Comparing these figures, both of wages and prices of food staples, with those current in this country, it will be seen that, while in Germany the purchasing power of a dollar or its equivalent may not be very different from what it is here, the value of labor, in dollars or their equivalents, is very much greater here than there, as a day's work may be exchanged for about four times as much here as it is worth in the German market. After all, the question of interest to the workingman is not the purchasing power of a dollar or its equivalent in a given country, but the purchasing power of a day's work. If a day's work will enable him to provide his family in this country with what, in Germany, would represent the work of four days, he is not likely to trouble himself about the purchasing power of the dollar, as compared with that of a Continental coin of equal value. A man must get the dollar before he can spend it, and if the American has four dollars to spend where the German workman has but one, and prices are approximately the same in the two markets, this advantage of the American workman is too obvious to need explanation.

The Vice-President.

Several prominent men representing varied interests, both mercantile and political, acquaintances of Mr. Arthur, have been interviewed to obtain their opinions respecting that gentleman's qualifications for the Presidency, in the event of Mr. Garfield's death. Mr. William H. Vanderbilt, Mr. Jay Gould, Mr. Chauncey M. Depew and Judge Hilton all express entire confidence that, in the case supposed, business would suffer no disturbance whatever. As remarked by Mr. Vanderbilt, "there would be no pretense or excuse for a panic." He would make "a wise, capable, honest and conservative Administration." Mr. Jay Gould, who has known Mr. Arthur personally for ten years, has a high appreciation of his business capacity, and is certain Mr. Arthur's desire would be to follow the policy, in all its main features, that Mr. Garfield has pursued. Judge Hilton is not aware that a single merchant in New York contemplates the possible accession of Mr. Arthur to the Presidency with the slightest alarm. These views commend themselves to the judgment of all intelligent men. The contingency so much to be deplored is one to which the American people can no longer close their eyes. President Garfield's chances of recovery are, unfortunately, very small. There seems to be no ground for the expectation that, in his present exhausted condition, he will be able to rally. Our people will not give up hoping that he may be spared; but it is comforting to know that, in the event of his death, Mr. Arthur will enter the office with the confidence of the business community. The time which Mr. Arthur has had to consider the subject of his official course since the President was wounded, has probably brought him to a realizing sense of the responsibility of his position, as well as a better understanding of the will of the people. The fears so freely expressed when his succession first seemed imminent, and which were based chiefly on his active and undignified participation in a faction fight opposed to the Administration, must have furnished him much material for profitable thought. Under the shadow of the seemingly imminent national calamity, Mr. Arthur has conducted himself with discretion and propriety. To hold him too strictly accountable for what happened before would be unfair. As Vice-President, Mr. Arthur's position was anomalous. He was not, properly speaking, a member of the Administration. As chairman of the Senate, his responsibilities and duties were but little different from those of a Senator at Large, and we do not know that he had not as much right to participate actively in politics as any other Senator. The contingency which has arisen is one which no one expected, and it was reasonable to suppose that he would continue in the anomalous position of Vice-President during the term for which he was chosen. Not being one of the President's advisers, nor in any way identified with the executive branch of the government, he could not influence the course of the Administration, and naturally he felt more interest in the choice of Senators from New York than in Mr. Garfield's policy. In thus excluding the Vice-President from participation in the deliberations of the Cabinet, the framers of the Federal Constitution seem to have made a mistake. As the constitutional successor of the President in the event of death or inability to discharge the duties of the office, the Vice-President should be a part of the Administration—the connecting link, so to speak, between the executive and legislative branches. But there is now no place for him in the councils of the Administration, and he can scarcely be expected to be in sympathy with it unless its policy suits his personal preferences. Mr. Arthur has undoubtedly learned a great deal during the past two months, and should he be called upon to assume the duties of the Presidency, we have no doubt he would enter that office with a full realization of its responsibilities, and that, so far as possible, he would carry out the plans and purposes of President Garfield.

A Proposed Patent Law for England.

After an agitation extending over a considerable time, the question of revising the patent law of England has been brought to a more definite shape, in the form of a bill drawn up by a committee of the Society of Arts. Coming as it does from an influential body, and representing the views of such men as Sir Frederick Bramwell, Prof. Abel, Dr. Siemens, Captain Douglas Galton and other members of the committee, it is of much interest. On the whole, there is noticeable an approach to our own system, and it contains provisions which, probably, could be embodied with success in our statutes. The main features of the draft are the following: The true inventor must make an application, accompanied by a provisional specification, which is referred to an examiner, who reports whether, in his opinion, the invention is subject matter for a patent, whether the title sufficiently indicates the nature of the invention and whether the provisional specification is in accordance with that title. Provisional protection is given for a period of nine months, and three months previous to the expiration of that period the applicant must lodge a further, more detailed, specification, with a written request for sealing the patent. The complete specification is again referred to an examiner, who reports whether provisional and complete specification cover the same ground and whether the claims are clearly defined; a copy of which report is furnished to the inventor, who may appeal against it. If not sustained by the Commissioners, he can nevertheless have the application proceeded with, but in that event every copy of the patent, if granted, bears a short statement of the report of the examiner. Before the expiration of the provisional protection, any person may oppose the grant of the patent before the Commissioners, whose decision is final. When granted, the patent runs for seventeen years from the date of the application; but it ceases at the end of the fourth or the eighth year, unless the patentee takes out a certificate of renewal, which is dependent upon the payment of a fee of £30 at the expiration of the fourth and £60 at the expiration of the eighth year. The other fees are £2. 10/ on the application and £10 when the patent is granted. The cost of a patent would, therefore, be at least £102. 10/, or about $700, for government fees. Compared to our own system this would appear very high, but it must not be lost sight of that this sum is distributed over a number of years, the first payments being light when compared with those hitherto demanded by the English Patent Office. Much can be said in favor of taxing a patent during its term in the way indicated. It weeds out many privileges, the owners of which have made no efforts to utilize them and bring them into public use. In this country there are many who, struck by an idea, take out a patent and quietly hold it, expecting that if it should turn out to be valuable, those in the trade would be forced to buy it. The investment is small, the risk light and the profit may be very good. The board of commissioners proposed by the draft of the Society of Arts is rather a curious one, and its powers are very large. It is to consist of three persons, appointed by the Crown, of whom one shall be experienced in engineering, one in chemistry and one in the law. It is difficult to see how inventors and manufacturers can accept without serious opposition such a feature in the draft as this, and it is likely that the sharp criticism to which it will be submitted will lead the committee to a revision.

The Importation of Spanish Pyrites.

The importation, at an early date, of Spanish iron pyrites into this country for the manufacture of sulphuric acid, will mark a very important step in the history of our chemical industry. There is no branch of manufactures which is capable of such great extension as the chemical trade, and its future is a very promising one. We are aware that important improvements are on foot to introduce modern European methods; but while we are pleased to note one of the evidences of this growing enterprise, we cannot help pointing out that in some directions it threatens already established American industries. For a long time very large quantities of Rio Tinto iron pyrites have been shipped to England, where the sulphur they contain (from 45 to 48 per cent.) is used for the manufacture of sulphuric acid. The residue from this calcining process, which holds from 3 to 4 per cent. of copper, is submitted to a chloridizing roasting with salt, and the copper is extracted by lixiviation, and precipitated either by metallic iron, or, more recently, by electricity. The residue, if it has enough silver to pay for working, is treated by the Claudet process. After having gone through this treatment, which thoroughly oxidizes the iron, a material is obtained which is called in England "blue billy," a very pure oxide of iron. This has long defied the ingenuity of English ironmasters to utilize it. As it is in the shape of a fine powder, it could not be used in any considerable quantity in the blast furnace. It has, however, found quite extensive application in fettling, and was experimented with by Dr. Siemens with a view to utilizing it in his direct process. It has, too, been largely used as paint, and altogether is not now considered the waste substance which it threatened to be in earlier days. It will be seen, therefore, that although ostensibly imported only as a "sulphur ore" for the manufacture of sulphuric acid, it can be used both to produce copper and iron, and may compete very seriously with the American iron paint. The question of the duty to be assessed upon this mineral is therefore important. By a decision rendered on June 22, 1867, by Assistant Secretary J. F. Hartley, on the occasion of an importation of iron pyrites from Canada into Oswego, the duty was fixed at 20 per cent. ad valorem. The question has been asked, and it is somewhat agitating producers of copper, whether in addition to this the duty provided for copper in ore—amounting to three cents per pound of the pure refined metal contained in it—would be collected. If not, considerable quantities of the metal, in the aggregate, would enter duty free, if the use of pyrites were to be adopted largely by chemical works, instead of using crude brimstone as hitherto. Of course, in the absence of any decision on this point nothing definite can be said, but in official circles the opinion seems to prevail that, not being technically or commercially an ore of copper, the small amounts of metal in it cannot be made the basis for the imposition of a duty. The constituent of chief value must define the status of the whole, and as there is no precedent for the assessment of more than one duty upon an article, there is every probability that it will enter as "crude mineral," and be accordingly made to pay 20 per cent. ad valorem. The copper in it will, as far as we can learn, be allowed to enter free, and of course the oxide of iron finally produced—as good an ore as can be obtained, barring its powdery state—will be able to compete with the product of American mines.

The success and popularity of postal savings banks in those European countries where the system has been introduced, has encouraged a movement in Germany, Austria and Switzerland to adopt it also, and there are some who advocate its establishment here. While there can be no doubt that it has largely encouraged thrift among the poorer classes in France, and there is every indication of its doing good work in England, it must not be forgotten that there it is little more than an extension of a system already established. In France and in England the State has hitherto been the custodian of the savings funds, and the employment of the post office officials as collectors of smaller amounts is only a further step in extending facilities to small investors. In France the deposits in savings banks go to a central bank under State management, and in England the savings take a similar course. It is radically different in other countries, where the question whether the establishment of the postal savings bank system would or would not seriously interfere with the business of existing institutions is being agitated. As in this country, the ordinary savings banks manage their business independently of the State. Under certain restrictions their officers receive and reinvest the savings confided to their care, and besides wielding considerable local influence, generally do a profitable business. Believing that they would lose a large number of their depositors if the State were to interfere, they strenuously oppose any movement in that direction. It is urged on the other hand, that in some countries, as in Austria, the private savings banks, being chiefly located in the centers of population, do not at all reach the poorer classes whom it is proposed to benefit, and that, therefore, their business will suffer little, if at all. The number of improvident people in those countries, where peasants and laborers are less self reliant, is very great. They are accustomed to look to the State and the government authorities with trust and implicit faith. They are too ignorant to be able to take care of their own affairs, and too suspicious to trust their management to what they believe to be irresponsible persons. In such countries the postal savings bank system must prove a great blessing, but it is doubtful whether the need for it is urgent where the average business intelligence of the people is as high as in this country.

One of the subjects that was to have been discussed at the recent meeting of the Amalgamated Association, was the advisability of stopping work generally in the iron mills for the months of July and August. It is understood that this movement did not meet with the favor that its proposers and supporters expected. The chief argument against it appeared to be the large number of laboring men earning small wages who would be thrown out of employment. These men scarcely make a living now, working year in and out. There is no doubt but that some of the work in an iron mill during extremely hot weather is very severe. This is especially true of puddling, but when we consider the number of men about the mills that would be thrown out of work by any arbitrary stoppage of work for two months, as well as the many thousands who would be left idle in establishments that depend on the iron mills, this proposed stoppage is hardly feasible, and some method other than this must be found to reduce the heat and

exhaustion attendant upon iron working. Besides, we imagine that the underlying reason of this proposed stoppage is not the heat. No doubt the men would be glad to escape the heat, but something else is in view in the stoppage.

Mr. J. S. Jeans, secretary of the British Iron Trade Association, has just published statistics of the English iron trade for the first six months of this year, which are very valuable as affording a means of appreciating the condition of the trade in that country. Mr. Jeans puts the production of the blast furnaces for the first six months of this year at 4,134,821 gross tons, which is considerably more than one-half of last year's output, estimated by him at 7,821,833. An interesting feature, however, of his present returns, is the fact that there has been a proven addition to the stocks during that period of 310,000 tons, which now sum up to 1,850,000 at least. Last year there was an estimated accumulation of only about 60,000 tons, but this did not by any means prove that production and consumption were nearly balanced, because the great bulk of the surplus stocks was transferred to this side of the Atlantic. This put it out of sight of our British friends, but by no means finally disposed of it. Through the agency chiefly of these masses of English pig iron, our stocks were run up to 550,000 tons on January 1st, 1881. We are commencing to cope with our load successfully, but cannot be counted upon to take much pig iron off the hands of English holders. With such figures as those presented by Mr. Jeans staring them in the face, is it not time for furnacemen in England to consider their position earnestly, and stop making metal which they cannot hope to sell at a profit.

Gambetta, nothing daunted by the results of the efforts of his great contemporary, Bismarck, announces as a part of his programme a blanket insurance by the State on all the risks of industry by death, accident and the weather. This is a counterpoise to the socialistic and communistic agitation against the republic.

Proposed Change in the Brazilian Tariff.

According to mail advices from Rio de Janeiro as late as July 24th, the Brazilian government contemplates another change in the tariff by putting on 5 per cent. additional duties. The editor of the Rio *News* remarks, with some reason:

"This is hardly politic, as duties are now high, and we doubt if the net results would be a gain to the government. Five per cent. of economy would be altogether better." The province of Pernambuco had led off with enacting the following additional customs duties, over and above those already imposed by the general government:

3 per cent. upon all national products and manufactures exported, the exceptions of law 1499 being preserved;
3 per cent. upon all national products and manufactures imported for consumption, excepting castor oil and tobacco, which shall pay 40 per cent. of its value, and preserving the exception of law 1499;
10 per cent upon all foreign goods, products and manufactures imported for consumption, excepting presses, type, ink and printing paper, and also all sole and dressed leather, for the provincial workshops;
30 per cent. upon boots and shoes, ready-made clothing, collars, cuffs, shirt bosoms, drawers, hats, vinegar, lime, saddlery, furniture, fine wines, beer and other alcoholic and fermented liquors, jewelry of gold and silver, or their imitations, firearms, powder, kerosene, and wheat flour, excepting common wines, which will pay 20 per cent.;
50 reis per meter upon white cotton fabrics similar to those of the province, 80 reis per sack of cotton, and 20 reis per sack of tow;
100 reis per liter of rum or alcohol, whether pure or in preparations, which shall be retailed in any part of the province.

On some commodities the new duties will be well-nigh prohibitive—on the article of kerosene, for instance, as not only the general government, but every province and municipality where it is sold adds still another tax.

The new Cunard steamer, Catalonia, had a very unfortunate experience in breaking her propeller shaft, when half way between the Fastnet and New York, but Chief-Engineer Barry seems to have been equal to the emergency. On investigation, he found that there was a spiral fracture, 3 feet long, in the section of the shaft next to the section carrying the propeller. As soon as the engines were stopped he took two cast iron bearing caps and bolted them together around the fracture. The diameter of the shaft is 15½ inches, and the caps are 14 inches wide. The next day he made a band of malleable iron from two bars and put it on the shaft to assist the other clamps. On arrival at Quarantine, Mr. Barry made a close investigation and found the appliances intact and the fracture the same as when discovered.

The exports of petroleum for the month of May, 1881, amounted to 34,815,484 gallons, valued at $3,361,155. The exports for May, last year, were 15,537,190 gallons, valued at $1,384,815, or less than half as much in value or amount as in May of this year. The total exports of petroleum for the eleven months ending May, 1881, were, 332,891,580 gallons, valued at $34,762,328, while the exportations for the same period ending May, 1880, were 395,226,420 gallons, valued at $33,992,712. It will thus be seen that while we exported over 62,000,000 gallons less during the eleven months ending in May, 1881, than in the corresponding period in 1880, the value exceeded that of the latter period by $769,416.

The Edgar Thomson Steel Works are gradually getting in a position in which, to use the words of Capt. Jones, the rail mill can show what it can do. Last week 3101 gross tons of rails were made at these works of 56 and 58 pounds to the yard.

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

Wednesday Evening Session.

At the opening of the evening session of Wednesday, August 10, the secretary read the treasurer's report of the financial condition of the society, which showed that it was in a very prosperous condition. Total cash receipts from all sources have been $6185.43. Total expenditures, $3288.85. The treasurer has in bank $619.08, and in safe deposit vaults, U. S. 4 per cent. bonds, which cost $2277.50. There is due from original and new members $735.

Mr. Reese being present, it was announced that a debate upon his paper would be in order. Mr. Grimshaw wanted to know if the holes in the blank did not change its size during the various operations to which the blank was submitted. Mr. Reese said he designed to cast the hole in the blank over a pipe. By the use of this a perfectly solid casting can be obtained all around the pipe. This is much better than to use a sand core, around which the metal is not likely to be solid. The hub of the wheel is to be made thicker than is wanted, and is to be condensed upon the pin. When finished, the hub would be almost the exact thickness needed.

In the construction of the machinery he had not made the axes of the dies parallel, but had placed them at a slight angle, so that the dies were nearer together on the side toward the rolling die. Toward the close of the operation, however, by means of suitable mechanism, they are straightened up. In answer to Mr. Durfee, Mr. Reese said that no wheels have yet been made by the process; in fact, the patents have not yet been issued.

Mr. Laurau questioned the chemical features of the invention as described in the paper, and said that he thought, in spite of the precautions spoken of, carbonic oxide was likely to be formed.

Mr. Reese discussed the question of the quantity of silicon used in the operation of making steel, and described experiments of his own in regard to the melting and handling of iron, giving figures indicating the small amounts of silicon used. The methods by which he preferred to work were then described, which were substantially those of his paper.

Some discussion between Mr. Reese and Dr. Egleston then took place in regard to the gases in the metal.

Mr. Hague's paper, "Comparisons Between Different Types of Engines," was then read by the secretary. This paper was published in our issue of August 18.

As no discussion followed, Mr. Rae's paper on "Latest Methods of Submarine Work" was then read. This paper we shall publish in our next issue.

Mr. Gordon asked whether, in paying out the cable through the fixed quadrants mentioned in the paper, there was any danger of the outer coverings of the cable being destroyed by the friction.

Mr. Rae said that this danger is so much less than those encountered in the other methods of operation, that it is tolerated.

Prof. Sweet then exhibited and described an instrument of the nature of a polar planimeter, intended for the use of steam engineers in getting the area of the indication cards. More properly speaking, it gives the average width of them without any of the mental calculations necessary with the polar planimeter. It is very small and goes into the tail of the indicator box. When in use the card is placed upon a board, the index wheel of the instrument is placed at zero and a T-square put against the beginning of the card. The tracing point is then carried around the circumference of the card and a dot made. So far the work is like that of the planimeter, and one may then read the area, but carry the point along the T-square till the wheel reads zero and make another dot, and it will then be found that these dots are separated by a distance equal to the average width of the card. The instrument is by Mr. Coffin, of Syracuse, N. Y. Prof. Sweet had no drawings ready, but stepping to the blackboard he made a demonstration of the principles involved in the working of the instrument, which he illustrated by numerous diagrams. The principle upon which this instrument is based, like that of the polar planimeter, is that when the axis of a rolling wheel is at an angle to its line of motion, the wheel revolves an amount equal to that which it would revolve in moving over the base of the right-angled triangle formed by its line of motion and its axis. Passing around any given rectangle the divisions of the wheel pass under the zero point, as in the usual manner with the polar planimeter, but if when the circuit is finished the wheel be moved along the vertical line formed by the T-square, it is evident that the zero point will come to the mark when the distance traveled is the average of the total distances up and down, and if a mark be made at this point it will be distant from the starting point the average width of the diagram. The instrument was spoken of as one likely to be much more useful and convenient than the planimeter or the parallel scale often sent with indications.

Here the question was asked as to the proper method of electing honorary members. Mr. Stirling said that he thought that honor should be conferred upon Captain John Ericsson, and he had asked the question in view of proposing his election.

Prof. Thurston in reply said that Captain Ericsson had positively declined that honor, which, by the rules of the society, is conferred only upon those who have "virtually retired from practice." The Captain says he is actively engaged in his profession and has no idea of retiring from it.

Mr. Barnet Le Van made a very grave complaint in regard to the short notification concerning the meeting, and the arrangements which had been made for reduced rates of transportation. He considered that the Philadelphia people had been badly treated. Many of them, he thought, would have come had better notice been given and suitable arrangements for transportation made at the home office of the railroad company. A very lively and amusing debate followed, in which several motions in regard to the matter were made and lost. Some information, however, was gained in regard to the best method of arranging for reduced rates, &c., and the debate ended by a vote which added Mr. Le Van and Mr. Grimshaw to the Committee on Meetings.

Friday Morning Session.

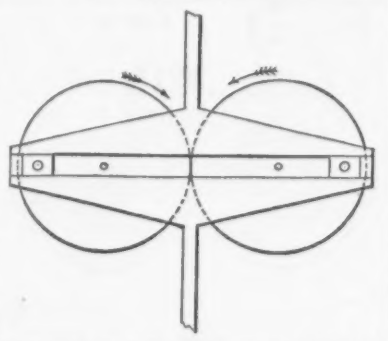
The society was called to order by the president. The secretary then read several letters returning thanks for favors and invitations given by the society.

Prof. Robinson then read a paper upon the "Counterbalancing of Engines and Other Machinery Having Reciprocating Parts." Of this paper we printed a synopsis in our issue of last week, August 18. It was of great interest, and, fortunately, had been printed by the secretary previous to the meeting, so that members were furnished with copies and could follow the demonstrations at leisure.

Mr. Porter spoke of the great importance of the subject, yet he was surprised in reading mechanical papers at the misty impressions prevalent upon this subject. It is a simple one, and ought to be much better understood. The speaker then made some elementary remarks, as he called them, upon the principles of counterbalancing. Why do we counterbalance a stationary horizontal engine? Simply to keep it from rocking. Counterbalancing does not add to the effectiveness, save of the fly-wheel. If we had an engine without weight in the reciprocating parts, there would be no tendency to shake when in motion, but if we absorb a portion of the power in starting these parts into motion, we have the equivalent of a gun with its shot and recoil. As the shot is sent forward there is a corresponding tendency in the gun to recoil in the opposite direction. An obvious way of disposing of this would be to place two engines opposite each other, so that their mutual recoils shall balance each other. This was done years ago by Sickles, who made a pair of paddle engines for a boat and placed them so that they balanced each other. The Wells engine is perfectly balanced in its reciprocating parts, which move in equal masses in opposite directions at the same time. Usually, however, we must use a revolving counterweight in order to balance the reciprocating parts. This revolving counterweight we resolve into its horizontal and vertical components. We have to ignore the vertical components and consider only the horizontal. The weight of this revolving counter-balance must equal that of the reciprocating mass at the point opposite the crank, and its center of gravity must be at a distance from the shaft equal to that of the center of the crank pin. The vertical action of the counter-balance is partly balanced by the vertical component of the connecting rod. Prof. Robinson's triangular rod will do it entirely. I made a drawing of an engine once in which the vertical component was to be balanced in a similar way, but I never dared to use it. It is important to consider, however, that the whole mass of the earth resists the downward action, and the upward thrust is resisted by the attachments of the engine to the earth. There is a disturbing action, it is true, but it is perfectly resisted. It is an important point to know to what extent we shall balance. If we keep the engine still we have done enough, even though we do not balance so perfectly that it would remain perfectly quiet if suspended so as to be free to move. Experiment itself will not always to be depended on. At 106th street, in New York, the speaker had an engine which illustrated this point. It shook in spite of the theoretically correct weights, and he feared that he should have to use in future an engine with inconveniently large counter-weights. Long after, however, it was found that the excessive weights needed were due to the character of the foundation, the engine being placed upon made ground.

Counterbalancing is seriously affected by the action of the connecting rod. While counter-balance acts equally the steam does not, owing to the angularity of the rod. Away from the crank it is in excess, and hence there is always an excess in the counterbalancing. On this account an engine balanced perfectly under existing conditions will then gradually move backward if free to do so, the motion increasing with the speed. The horizontal component of the reciprocating force equals the cosine of θ.

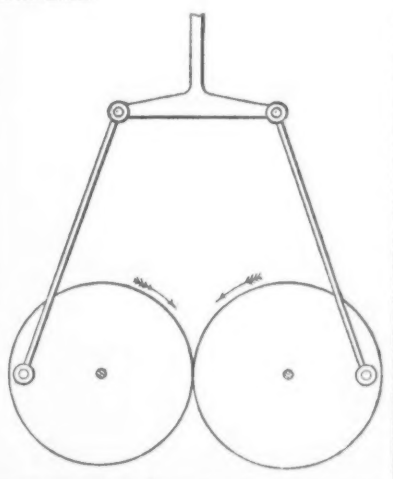
During the reading of Prof. Robinson's paper the professor alluded to some suggestions made by Mr. Partridge for perfectly counterbalancing saw mills and similar reciprocating work. Mr. Partridge said that it was a wonder that the makers of high-speed saw mills had so long contented themselves with imperfectly-balanced mills.



Arrangement of Parts for Perfect Counterbalancing.

Theory said that the pitman could not be satisfactorily balanced, but he could not see why this should in any way be allowed to interfere with perfect counterbalancing, for it did not appear that the pitman was an absolute necessity. If a pair of disk cranks are placed in the same plane and worked in the same slotted cross-head, and have their edges toothed so as to revolve in the same directions, then it will be possible to introduce counter-balance weights which shall be exactly equal in effect to the saw frames, saws and other reciprocating parts. The above sketch shows the drawing which was placed upon the blackboard to illustrate the point.

In this case there is no strain upon the guides of the slotted cross-head, as all the forces are in couples and balanced. It would make no difference whether the cranks were driven by the cross-head or were themselves the drivers. Even with the pitman there seems to be no reason why all the parts of a saw frame should not be balanced, and even the pitman itself might be, as is shown by the following sketch. Two disk cranks, as before, are made, by gear or otherwise, to revolve in the same direction. A pitman from each then connects them to a common cross-head.



Arrangement of Parts for Perfect Counterbalancing with Connecting Rods.

In this case, as in the other, the disturbing forces are all made equal and opposite.

Prof. Robinson then called attention to the very destructive effects which are produced when the rhythm of an engine or machine is identical with that of things around it. The vibration then becomes very great indeed. Even a gram weight laid upon the blade of a handsaw, unsupported at one end and quickly removed could, by carefully observing the period of vibration, be made to set the blade in very strong motion. He spoke of having seen a bridge set into more violent vibration by a dog trotting across it than by a horse car which immediately followed. The speaker then alluded to the story of the fiddler bringing down the Coalbrookdale Bridge, and asked if any one knew whether the story was true. It certainly had certain elements of truth.

President Thurston then asked whether the immediate cause of the fall of the Pemberton mill was not vibration due to the machinery.

Mr. Woodbury said that defective construction of the columns, &c., were largely influencing causes. He said, however, that he thought the vibration of the columns was the last straw. If it was desirable he was prepared to bring up the subject of the destruction of the mill at some future time, though it might seem a somewhat old subject.

President Thurston said it would be most interesting, and invited Mr. Woodbury to bring it up at the next meeting.

Mr. Woodbury said that he had been interested in some experiments regarding the crushing of full-sized mill columns, and hoped that he should be able to bring forward some interesting facts at the next meeting. So far, he had never known of a full-sized mill post being crushed, though they had put 190,000 pounds on 10 inch posts.

Mr. Porter, in answer to a question, said he never built but one vertical engine, which was a very long time ago. With such an engine he supposed one must take care of the horizontal components and let the others take care of themselves. In addition to the crank, the heavy end of the connecting rod must be balanced.

President Thurston wanted to know whether it would be worth while to balance the pressures upon the crank pin. In the Porter-Allen engine the card of pressures show them to be equal. The question is whether we can do it in a vertical engine, which seems ill-adapted for the purpose. In the horizontal engine we may take no account of gravity, and in the vertical we do, thus introducing a very great element of difficulty. The speaker's idea was that it could not be done save by a corresponding weight acting in the opposite direction, after the manner of certain forms of air pump connected by beams and links. In the Madawaska, Captain Ericsson attempted to counterbalance motions to some extent by the motions of masses of metal, but this seemed to be only partially successful.

Friday Afternoon Session.

After the session was called to order by the president, several designs for certificates of membership were presented for inspection. The president spoke of the desirability of having a diploma of the kind, and also of the need for incorporation of the society. This subject the council wished to have the members consider. The members will then be able to decide intelligently when the question comes up. A letter was then read from Mr. Bogart discussing the question, and showing that incorporation is necessary in order that the society may hold property, have a seal and be able to sustain action in the courts.

It was incidentally remarked that incorporation under State law was necessary, because there was no general United States law which would cover the case.

Mr. Vogt then presented some interesting matter in regard to the method employed in the Pennsylvania Railroad shops for balancing locomotives. Mr. D. K. Clark's formulæ was to find the amount of the revolving weight, including pins, cranks and rods; add to it the weight of the reciprocating parts and make the counterbalance equal to the whole amount. The weight for each wheel was found by dividing the whole amount obtained by the number of wheels. Allowance is, of course, made for extra weight, like the main pin, &c. In "Consolidation" engines with very long and heavy main rods and small wheels, it was found that a sufficient amount of counterbalance weight could not be got into the wheels. They ran very well, however, with what they have room for. In the large wheeled express passenger engines a curious fluctuation was noticed when they were counterbalanced according to Clark's rule, and this was traced to the fact that in putting in the counter-balance weight they had practically increased the weight of the reciprocating parts, and thus obtained an increase in the horizontal component at right angles to the axis of the engine. The present practice is, on these engines, to counterbalance the rotating and two-thirds of the reciprocating parts. This is not exact, but it gives good satisfaction. The results are not felt upon the train, but make themselves manifest upon the bridges. In engines where the counter-balance is a little light, a flat spot is found upon each driver a little behind the crank—that is, at the spot 40 or 45 degrees from the crank when it is coming down. This is not due to slipping, because the spots bear similar relations to the cranks of opposite wheels, and do not correspond to points touching the track at the same moment. It must be the result of the unbalanced downward blow of the wheel. The vertical component of the connecting rod or the thrust is not taken into account. These shocks are synchronous, and may in some cases be serious enough to break bridges.

Years ago, Crampton's long boiler engines, with very large drivers, were much used in France. They ran off the track so frequently that a cause was sought for it, and it was traced to excessive counterbalancing, which reduced the adhesion at the regular speeds. They were fully counterbalanced according to rule.

Mr. Smith asked whether there was any advantage in the 4-cylinder locomotive which had recently been brought to public notice.

Mr. Vogt said it was that of Shaw, and the construction was a very doubtful one. There is great reason to think that such an engine will not be economical. One of the causes for this is found in the greatly increased radiating surfaces presented by the four cylinders. Years ago Haswell, the well-known Austrian engineer, brought out something similar. This engine is not unlike that of Mr. Charles Brown. The valve motion was a very peculiar one. It has no link and no eccentric. It is a combination of the parallel rod motion and that of a system of connected levers. The motion is a somewhat intricate one to describe, but it works well. A sketch was made partially illustrating the construction.

Mr. Smith said it reminded him of a valve motion which he once put upon a vertical engine, in which a bell crank working the valve rod was itself driven by a link connected with the crank pin.

Mr. Lyne said that in the Shaw locomotive no evidence could be found of vertical vibration, nor could any be found when it was crossing bridges. This engine has double cranks outside of the frame on each side of the engine. The pairs of cranks are set as usual, but the cranks of each pair are at 180 degrees from each other. There are four cylinders, each of 10½ inches diameter. The speaker had heard that a double crank had been broken, and that some difficulty had been met in making the connections between the cranks and wheels. They are considering the question of fitting up the connection like a steamboat crank or with brasses. The engine was set upon four jack screws at the Hinkley Locomotive Works, and run up to a speed of 275 revolutions per minute. There was no vibration. The engine is said to burn less coal than a 17 by 24 passenger engine hauling an opposite train on the same road—the Boston and Providence.

Mr. Stirling said it was a satisfaction to have locomotive engineers among the members of the society, as they possessed a great deal of experience in regard to the counterbalancing of engines under difficult conditions which was of the highest value. Our locomotive engineers can throw light on one point, perhaps—that of the regulation by compression. It would also be interesting to know what amount of coal per horse-power per hour a locomotive burns.

Mr. Vogt: Upon that point nothing definite is known, though an English engineer estimates or calculates it at 2 pounds per horse-power per hour. My own impression is that we do not know. There is no data available in the possession of the road that can show it exactly. Mr. Cloud has promised to make the necessary observations on the new pay engine, but he has not yet done it, and I have had no time.

Mr. Lynd mentioned some experiments upon the Delaware, Lackawanna and Western road, in which definite figures were obtained, but it appeared when he came to examine the circumstances that the results were not reliable. As he expressed it, the piston rings formed a sort of cloud of iron in the cylinder while the engine was in motion, one ring alone being broken into 15 pieces. This was the engine from which the data was obtained. Some very amusing details were then given in regard to the packing used and its behavior in wear.

Mr. Stratton said he did not think the horse-power per hour had yet been figured out by any of the railroad men. The accounts of the Pennsylvania road were kept by the train mile.

President Thurston said that the portable engines had produced the best record that he knew of. At one of the English agricultural shows they had shown 2½ pounds of coal per horse-power per hour.

Mr. Woodbury said that the Easthampton Rubber Company say that they get a horse-power for 2.1 pounds of coal per hour. They put one of their engines in his charge, and, upon testing carefully and taking cards, he found the consumption was 2.6 pounds of coal per horse-power per hour. This was the best record of the kind of which he had any knowledge.

President Thurston supposed that a good engine would give a consumption of 3 pounds. Condensing engines have come down to 1.7 pounds. From locomotive engines we have, however, very little information that is trustworthy.

Mr. Woodbury said the Lynn and Lawrence pumping engines showed a record of 1.69 pounds of coal, and in good weather the figures have been as low as 1.65. The consumption of steam is from 16 to 18 pounds per horse-power.

Mr. Stirling: The locomotive has an advantage in the extreme rapidity of its combustion.

Mr. Porter: It is a great pity that w

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Are forged from a solid bar of steel. Afford a **firm level bearing,** thereby securing to the horse the most natural position for comfort and speed. Is a **self-cleaning** shoe, and will not "ball up." Equally good for summer or winter use. Will prevent horses from "calking" or growing corns. Can be resharpened as readily as an iron shoe.

OPINIONS.

I do not hesitate to give it as my opinion that it combines more excellences than any I have before seen. It provides a solid base under all circumstances, for the horse while standing or traveling; has no rocking motion while the animal is turning, and possesses eleven calks to protect him from falling. I have never seen the inventor of this improvement, but I desire, in the interest of the noblest animal living, to thus thank him for the good his shoe is likely to bring him.

HENRY BERGH,
President the American Society for Prevention of Cruelty to Animals, New York.

OFFICE OF NORTH CHICAGO CITY R. R. Co., Chicago, Feb. 16, 1881.

CHICAGO STEEL HORSE SHOE CO.—*Gents:* We are using your "Dunning Steel Horse Shoe" on our car horses, and find they last us from three to four months before being worn out. We drive our horses about 16 miles a day—half over cobble stones and balance pavement. We consider them the best shoe made. M. W. SQUIRES, Supt.

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A. W. KINGSLAND,
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Send for sample keg, assorted sizes. Full descriptive catalogues sent on application. Manufactured exclusively by

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Gentlemen.—This cut illustrates our

CAST IRON

Furnace Lamps

which are superceding entirely the Tin Lamps wherever introduced, in consequence of their durability. They are now extensively used in the Iron Districts of Ohio and some in Pennsylvania.

We call your attention to and solicit your order for them, confidently asserting that they are an **A No. 1 article in every respect.**

Sample sent if desired.

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Established 1838.
Bevin Bros. Mfg. Co.,
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Manufacturers of
SLEIGH BELLS,
House, Tea, Hand, Gong Bells, &c.
Bell Metal Kettles.

The Patent Combined
Dinner Pail and Lantern.
The most perfect Dinner Pail in the world. Hot coffee for dinner and a Lantern at night.
Manufactured by JOS. HAIGHT,
PORT CHESTER, N. Y.
Sent by express on receipt of $1.00. Agents wanted.

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MANUFACTURERS OF

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Office and Factory:
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SPECIALTIES: Fluting Machines, Hand Fluters, Plaiting Machines, Christmas Tree Holders, Bicycle Portable Pump, Mrs. Potts' Patent Cold-Handle "Crown" Irons, Ice Cream Freezers and Cake Mixing Machines.

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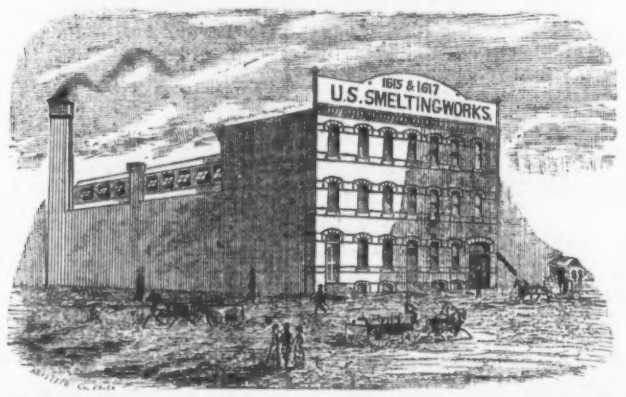

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PIG AND BAR TIN. PIG AND BAR LEAD.

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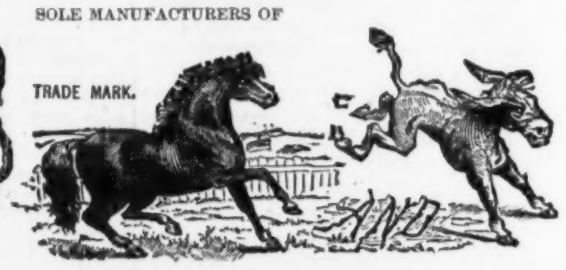

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Chain and Rope Goods.

These goods are sold by all leading jobbers in General and Saddlery Hardware at manufacturers' prices.

Send for illustrated catalogue and price list.

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WEST TROY, N. Y.

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Manufacturers of

Spring Calipers and Dividers.

Also, Surface Gauges and Counter Sinks, Stevens' Patent Breech-Loading Sporting Rifles, double and single barrel; Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunters' Pet Rifles. Our

SHOOTING GALLERY RIFLE

Is the favorite everywhere.

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GENUINE BABBITT,

Guaranteed at a speed of 10,000 a minute, and at any pressure for 10 years.

DEOXIDIZED BRONZE,

Superior to Phosphor Bronze or any other alloy of Copper and Tin for Machinery Journals.

PHILADELPHIA, October 4, 1879.

PHILADELPHIA SMELTING COMPANY, City.—GENTLEMEN: After a trial of eighteen months of your "Deoxidized Bronze" as journal boxes in our rolling mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used.

Very truly, HENRY DISSTON & SONS.

cannot have a series of experiments made by competent persons, to give us a knowledge of the horse-power and fuel consumption of both freight and express engines. It is a very serious matter to get this information, involving as it does expense of both time and money. Whoever undertakes it must have leisure and the most abundant opportunities, for it is a work that cannot be done on a single road; no one road in fact presents all the conditions under which it would be desirable to test engines. It would be necessary to obtain the information in regard to engines by different builders, and under different systems of management. It would be of great value if the society could appoint a committee to undertake this work and make the necessary experiments. In order that the work done may be of value, we must know not only results, but the means taken to obtain them. Without this, little dependence can be placed upon them—they become, in fact, of no account.

It was here remarked that the society should as a whole undertake the work, every member, as opportunity afforded, contributing to the results.

Mr. Smith spoke of his promised resolution in regard to original investigations, which he mentioned at the spring meeting at Hartford, but said that he should defer it.

At this point resolutions were read presenting the thanks of the society to the officers of the Pennsylvania Railroad, the Cambria Iron and Steel Company and others, for the favors and pleasant attentions which had made the meeting of the society so enjoyable.

"The Nomenc'ature of Machine De'ails," a paper by Mr. Oberlin Smith, was then read. This subject is one of great importance, yet it is in a state of much confusion. So great is this confusion, indeed, that it seems that a reform must come from the very necessities of the case. Both scientific societies and technical schools can do much toward bringing this about.

We first have the question of numbering machines, when we think of putting them upon the market. Shall they be numbered up or down is not a question easily answered, and both methods have disadvantages. Indeed numbers in themselves are undesirable. If the machines of different sizes, as first made, are numbered regularly there are no places to put in intermediate sizes which may be made afterward, unless fractional numbers are used. Thus we may have the original numbers 1, 2, 3, &c., and the intermediate sizes 1½, 2½, &c.; or, we have 1 and 11, 2 and 22, the double numbers being supposed to be intermediates between the others. It is difficult, if gaps are to be left, to know how many are likely to be wanted, what positions they should have. The Philadelphia plan of street numbering has certain advantages which should not be overlooked.

A system of names for the details is needed at almost every step of machine production. These names are absolutely essential for drawings, lists, patterns, &c., and in a good system the arrangement should be such that each name should completely designate that portion of the machine to which it is applied and isolate it from all others.

Here two or three suggestions were made which were of much value. The name should be accurate, suggestive, a help to the memory and brief. Usually names which are accurately descriptive are not brief, being derived from one another in an interminable way. To suit the wants of the shop we need an elastic, comprehensive system. The speaker then gave an outline of one which he had employed is his own establishment.

At first the machines built were numbered and the details lettered. As the details are what may be termed units or single pieces—that is, the elements of a machine—the alphabet was soon exhausted and double letters were used. Next, the machines were lettered and the details numbered. Still another experiment was tried, when figures were used for both machines and details, but this lacked suggestiveness. The system finally adopted was to give the machine a name, and have a piece or detail name also. The machines have names composed of three words, the initials of which are used for the shop name. Brevity would call for two names, but this would hardly give a sufficient variety. The capitals give the machine, and thus T P A would mean the machine, and T P A–2 one of the details. In this case the machine is a treadle foot press, and T P A–2 refers to some detail. The advantage of such short shop names for use on drawings, patterns, &c., was illustrated by a table, the symbolic name in all cases showing itself one-fifth to one-tenth as long as ordinary names, or names formed in the usual haphazard fashion of the shops. If the article has not been made long enough to have settled into a standard shape, no attempt is made to thus fix the nomenclature. If a part goes out of style or is changed, a small letter is added to the symbol to signify the fact. If any important change is made, so that the machine itself appears to be different, it is given an entirely new name to distinguish it from all others which are made in the works. The system described seemed very complete and capable of extensive application.

Mr. Stratton gave some particulars of the method employed on the Pennsylvania road for designating various parts of a car, &c. The castings for cars are all known under the letter V. The castings for trucks are all numbered from 1 upward. Then come the castings for freight car bodies. The letter and the number are cast upon each piece. All engine castings are X. The ferryboat castings are all designated by F. In the catalogues of castings, each one is described at length opposite the proper number, so that it may be easily identified. It is also easy to refer from the catalogue to the casting. In ordering, the numbers and letters are always used. The forgings are not numbered. When a new engine is to be built, the forgings are ordered from a list. It not infrequently happens that they run out of numbers, from not having left a sufficient number of blanks between the different classes. As yet, the alphabet has not been used up.

Mr. Smith spoke of the difficulty of dealing with the names which customers give, and thought that, for accuracy in ordering, the year of the catalogue should be given.

Several gentlemen took part in the debate at this point, and the following points were made.

If in getting an order from a distance, the manufacturer is in doubt as to its meaning, he must wait for further advices. This may entail long delays when the order comes half way round the globe, but it is better than making a shipment of what is not wanted. A nomenclature even in a shop is difficult to keep up if it is not constantly attended to.

The difficulties of translation are exceedingly great. It is often best to have a literary man make a translation, with instructions to convert all technical terms literally from one language to the other, using his own judgment in the signification of terms, rather than trust the work to one who is mechanically posted in only one language. The interpretation to the skilled mechanic is then often simpler than with the apparently more correct translation.

At Frankford Arsenal a very perfect system of nomenclature has been perfected by Major Metcalf, from whom, it is said, information in regard to it may be obtained.

Mr. Hall's paper on "A Method of Arranging and Indexing Drawings and Patterns" was then read. It will be found upon another page. Speaking of his own system, Mr. Porter said its feature was simplicity, and he would at some future meeting present it to the society.

Prof. Robinson: Drawings may be divided into three classes. First, there is the designing drawing, on which shaping and sizing are done, interferences arranged and the adjustments made. This drawing is sometimes not even inked in. Second come detailed drawings, as they may be called. These are for the guidance of machinist, pattern maker and blacksmith. From these alone the machine may be constructed. The third is the drawing which shows the machine as a whole completed. Drawings of this kind are, at times, valuable for the purpose of selling machines. They enable a complex machine to be assembled with ease. This drawing may be a perspective or a combination of various sections and plans with the perspective. The first drawing may be of any size, while the sizes of the others are determined by convenience of the paper. As the sizes must be upon the drawings, they must be large enough to accommodate the figures. The shop drawings must be easily handled, and of such a character that they can be cleaned, or else made in quantities by the blue process.

Mr. Smith: We have only two classes of drawings. We sometimes finish the design drawing and make that the erecting drawing also. We have six sizes of paper, the largest 24 x 48. The smaller sizes are obtained by cutting in two. The different sizes are lettered A, B, C, &c.

Mr Bond: At Pratt & Whitney's we use "Double Elephant" paper, and get our smaller sheets by division. The sizes are lettered.

Mr. Vogt: In the offices of the Pennsylvania Railroad Company two sizes of 58-inch "Eggshell" paper are used. A whole sheet is 35 inches of this paper, which comes in rolls, and a half sheet is 29 x 35 inches. The designing drawing is called in the offices the "General Arrangement Drawing." Details are not very much worked out on separate sheets. Blue prints are now sent out. The details are sketched and sent out in blue, the boilers and large parts all by themselves. The drawings have consecutive numbers, and an index book is kept for reference. There are now some 3000 drawings, and if these were detail sheets the number would be 10,000. It is rare that they employ more than a 3-inch scale.

The second portion of Messrs. Wolf and Denton's paper on the "Most Economical Point of Cut-off" was then read.

Mr. Kent said he thought that there must be some fallacy in the reasoning. He thought they had not solved the problem of getting the best expansion for a given amount of horse-power. For example, when 1, 2, 3 or 4-horse-power is to be used, it is not a question of what is most economical for that engine, but for that horse-power which we wish to use.

Mr. Porter: There has been a tendency to overdo expansion and to furnish an engine too large for the work. A non-condensing engine carrying 80 pounds of steam cuts off too short at one-fourth. It should be made no larger than would be necessary to do the work, cutting off at one third. It is not the size of engine that a man should buy, but the amount of horse-power that he wants. The engine builder should be careful not to furnish too large an engine. The smaller engine may not need the ornamental appendage of an accomplished engineer. The earlier cut-off engine men began to make high-speed engines of small size, but they are changing and making large engines working slow.

Mr. Woodbury, in illustrating the proper method of considering this subject, spoke of a case where a mill owner wished to put in a steam engine to supplement water power. The question of a condensing engine came up. The condensing engine cost $1200 more than the other, and $300 was needed for the pumps, &c. The interest $75, and the repairs $30, made the extra cost $105 per year. At $7 per ton for coal, the saving was $1.40 per day while the engine was at work. It was evident, then, that if the engine only ran 75 days in a year, the two styles would be equal. If the steam power was needed for more than 75 days, the advantage would be with the condensing engine at the rate of $1.40 per day.

Mr. Woodbury's paper on the "Arrangement and Maintenance of Systems of Fire Protection for Mills" was read by title, after which the society adjourned.

The engines at the new pumping stations of the Brooklyn City Water Works at Valley Stream and Springfield are not working satisfactorily. They were intended to pump 4,000,000 gallons of water every 24 hours, but thus far they have pumped only 3,000,000 gallons. They have not yet been accepted by the department. The builder says that he will attach a fly-wheel and make other alterations that will make them able to pump 7,000,000 gallons each.

Method of Arranging and Indexing Drawings and Patterns.*

BY A. F. HALL.

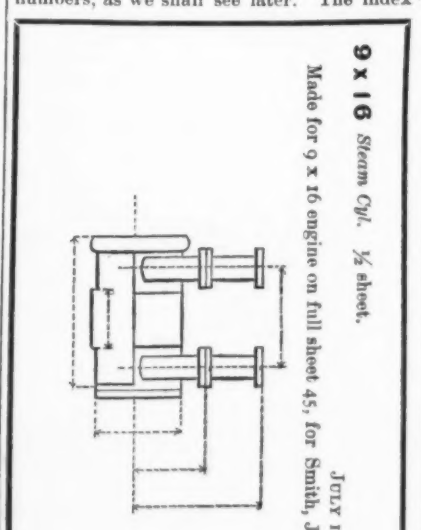
Any time which the engineer devotes to perfecting the arrangement and indexing of his drawings, will be amply repaid by the time and trouble it will eventually save him, and if the writer of this article is able to assist, even to a slight degree, his professional associates in attaining the desirable object, his efforts will be fully rewarded.

In what follows it will be the aim to point out how to proceed when indexing a new set of drawings, and also how to remodel a set, arranged in the ordinary manner, to conform to what the writer considers a more convenient system.

For the sake of uniformity and ease in handling, the writer has made all of his drawings on either full, half or quarter sheets of Whatman's "Double Elephant," and has arranged them in drawers of corresponding sizes and about 2 inches in depth. Each drawer is provided with a peculiar handle, having a pocket for a removable label, a sketch of which is appended.

Drawer Handle.

The drawings are all numbered on each of the four corners, the numbers on the left-hand end being upside down, so that they may easily be read should the drawing have been turned around in the drawer. Every drawer is labeled with a number corresponding to the drawing bearing the lowest number in that drawer. To avoid confusion, no two drawings have the same number, simply letters being used in connection with the numbers, as we shall see later. The index



9 x 16 *Steam Cyl.* ½ sheet. 45A

Made for 9 x 16 engine on full sheet 45, for Smith, Jones & Co.

JULY 1, 1881.

9 x 16 *Engine.* Full sheet. 45

Indicated powers:
Without condensation 60
With condensation 75
Fly wheel ..... 4 ft. 6 in. diameter.
Weight of iron ..... 700 lbs.
Length ..... 10 ft. 3 in. } Size of quadrangle occupied
Width ..... 6 ft. } by engine.

Made for Smith, Jones & Co.

12 *Steam Pistons.*

½ sheet 46
½ sheet 46A
½ sheet 46B

98

98, ½ sheet 46
A, ½ sheet 46
B, ½ sheet 46
Pat. Book, page 510.
C, ½ sheet 46A
D, ½ sheet 46B
Pat. Book, page 7.

and references always tell on which of the three sizes the drawing is made, and consequently in which set of drawers it will be found. To illustrate: Let us take a drawing of an engine, 9 x 16, made on a full sheet and numbered 45; the index card referring to this engine will have "*Drawing Full Sheet* 45," which tells at once the set of drawers and the position in those drawers where it must be sought. On the main drawing of the engine together, or upon a sheet referred to on that drawing, will be found references to the various details used in its construction, thus: Steam cylinder, ½ sheet, 45 A; steam piston, ½ sheet, 45 B; cross-head, ¼ sheet, 45 C, &c. It may, of course, happen that parts which have been used for other engines are also to be used for this; then we shall have something like the following: Connecting rod, ½ sheet, 36 B; stuffing box, ¼ sheet, 27 M, &c. Each one of these details will always have a reference to the machine for which it was first made. Where there are many parts of a kind and size, but varying in design or arrangement, it is well to group them and give them all the same number, but different letters. By so doing we can easily compare them, and see at a glance what has been done and whether any of them can be utilized in a machine in process of construction. Suppose, for instance, the drawing to be of a 12-inch steam piston, and this drawing to be ½ sheet, 46; now, all other 12-inch steam pistons would have this same number, with various letters, and would preferably be on sheets of uniform size. The index card for such would be as shown above.

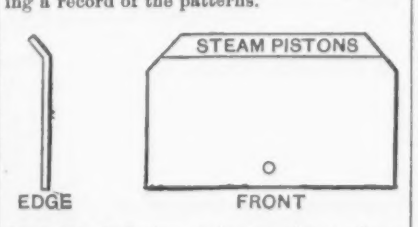
The card not only tells the drawings, but the letters already used, and thus prevents repeating a letter. When all of the letters of the alphabet have been used a new number may be taken and another group be formed, though the letters may be doubled. Such groups are very useful, as they are soon learned, and reference to the index often becomes unnecessary. Whenever a pattern is to be changed, a new drawing should be made and the change carefully indicated, reference being given to the original drawing, which drawing should also have a note stating the changes that have been made and where these changes are to be found. Even if such changes are to be permanent, the original drawing should not be erased, as it is oftentimes necessary and important to preserve the record, and it is better to make a new drawing.

All drawings should be indexed on card of uniform size, about the size of a postal card, and arranged by titles in alphabetical order, cards of different letters being separated by thin strips of wood or by a zinc plate of the size of the card, this plate having one edge bent so as to form a lip which projects sufficiently for writing the divisions. The plates are sold by the Reader's and Writer's Economy Company. Where there is a group of details, such as steam pistons, a slip with title "Steam Pistons," may be inserted and the sizes arranged in numerical order in this division. On many of these cards little descriptions are written and sketches sometimes added giving the principal parts, so as to avoid, oftentimes, reference to the drawing.

The tracings are kept in a duplicate set of drawers for the use of the workmen.

[Specimen of card index for pattern numbers.]

Having now described the manner of arranging and indexing the drawings, it remains to show the method adopted for keeping a record of the patterns.



The hole in the bottom is for inserting a wire to prevent its (as well as the card's) removal, the latter also having corresponding holes when desired.

Zinc Plate.

Every pattern has a number, which is given on the drawing, the main piece having the simple number and all loose pieces belonging to this bearing the same number, with the addition of various letters. Thus, the patterns for the 12-inch steam piston would be numbered somewhat as follows: Head pat., 98; follower pat., 98–A; ring pat., 98–B, &c. Card indexes are arranged giving the various pattern numbers, and referring to a book wherein a description and other particulars of these patterns are given. These cards are made as shown, and are arranged in numerical order in a drawer, each group of 100 being separated by a slip or zinc plate, as already described.

These cards also show the letters that have been used in connection with any

PAGE FROM THE PATTERN AND DRAWING BOOK.

510.

No. of Pattern.	Drawing.	Date when Finished.	Material.	Cost of Material. Per	Cost of Material. Total.	Hours Labor.	Total Cost.	Description and for what used.
98	½ sheet, 46.	July 28, 1881.	Pine.					Indicate where change is permanent.
98 A	½ sheet, 46.	July 29, 1881.	Pine.					Head of 12-inch steam piston.
98 B	½ sheet, 46.	July 30, 1881.	Pine.					Follower for 12-inch steam piston.
								Rings for 12-inch steam piston.

number. Should a piece be misplaced in the foundry it can be traced, by the number which is stamped upon it, to the index, and by that to the drawing and pattern book. In ordering castings, the parts which are wanted can be designated by the number and letter. In addition to the above, each pattern maker receives a printed slip, a sample of which is appended, to be filled out and handed by the foreman to the drafting room on the completion of the pattern to be recorded in the books alluded to, a leaf from which accompanies this article.

BOUND IN BLOCKS AND GIVEN TO PATTERN MAKERS.

Pattern....98
Drawing....½ sheet, 46
Date when finished....July 28, 1881
Material....pine
Hours labor

The method above described has, in a great measure, been in use about nine years with perfect success, the workmen using it without trouble. It is much better than the ordinary method of cataloguing in a book, as it permits of a systematic arrangement impossible in a book, unless the drawings are complete and no more are to be added. The great advantage of uniformity in the sizes should not be overlooked, for where the drawings vary in size the smaller sheets are liable to slip under the larger and thus escape notice. Some have observed that their drawings vary so much in character that they cannot be classified; yet all must have titles, and can easily be alphabetically arranged by these titles. Again, others say they have so few drawings that it will not pay. To those the answer is—who knows how rapidly your drawings will accumulate and soon reach a state of chaotic confusion! The writer was fortunate enough to commence with this system, and time has shown him its incalculable value. His collection now amounts to about 3000 drawings.

It will now be shown how a collection consisting of over 3000 drawings was remodeled from an imperfect system.

The drawings were arranged in sizes to conform, as far as possible, to full, half and quarter sheets of "Double Elephant," and were then grouped, there being, of necessity, groups of the same kind of pieces on sheets of different sizes. A book was printed containing two columns, the first having the heading "Old Number," and printed with numbers arranged in numerical order and in groups of fives; the second column had the heading "New Number," as follows:

Old Number.	New Number.	Remarks.
1	½ sheet, 70	
2	¼ sheet, 76—A	
3	½ sheet, 50—B	
4	full sheet, 69	
5	¼ sheet, 86—N	
6		
7		
8		
9		
10		

The drawings were then renumbered and lettered as they came along, and these numbers written in the book opposite the numbers in the column "Old Numbers," which corresponded to those numbers first given to the drawings. In order not to mix up the drawings by arranging and grouping them

* A paper read at the Altoona meeting of the American Society of Mechanical Engineers, Aug. 10–12, 1881.

before indexing, these were carried on as the drawings were numbered, so that the work could be used as it progressed, without causing confusion. Since this has been done the draughtsman says that every one is very much pleased, and wonders how they managed so long without it, since they save a great deal of time, and have no confusion as formerly.

The Sliding Scale in the North of England.

By the determination of the workmen, notice has been given that the sliding-scale arrangement will be terminated in a few months, so far as the miners of Cleveland and the blast furnacemen of the North of England are concerned. The notice which has been given on the part of the miners and blast furnacemen, suggests an inquiry that may be answered by the remark that it is with the base of the scale, rather than with the system, that there is dissatisfaction. And thus it may be looked upon as probable that negotiations will, after a time, be entered upon by the two parties to the arrangement, with a view to its renewal in a modified form. It is interesting, says the Newcastle *Chronicle*, to notice that in the period in which the scales have been in operation they have wonderfully steadied the trade and the rates of wages. The prices being ascertained quarterly, the fluctuations of one shorter period have in one direction been balanced by others in a contrary direction, and thus the movements in the realized price have been less in either direction than the market rates. But the workmen have not been the losers. On the one hand, if in the time when prices were rising the fact that the scale was based on the realized price kept the rate of wages from moving so rapidly upward as it might have otherwise done, yet the same cause postponed the fall in the rate of wages. And the fact that the sliding scale has not operated harmfully on the whole, is shown by the remembrance that last year, both to the ironstone miners in Cleveland and the blast furnacemen of Cleveland and Durham, the sum paid for wages was more than in any previous year, though it may be that it was divided over a slightly large area. The workmen have had fuller work, and have, on the average, produced more than in any previous year; and the employers have in a degree benefited by this, while the annoyance and loss of strikes have been conspicuously absent. In the pig iron trade, the experience of many years has shown that the miners have usually received wages that bore a certain proportion to the average market price; and this gave some ground for the negotiations that led to the adoption of the sliding scale. That scale, however, was based on the less fluctuating realized price—less fluctuating, because it is based on a larger scale of iron, and on a scale over a longer period. In the first year of the scale it may be that the miners received slightly less than the proportion they had been accustomed to would have given them, but the postponed benefit has in the last few months reached them—the present rate of wages being above that of the proportion that has unconsciously prevailed. It is quite probable that in the adoption of an experimental scale—a scale experimental in defining a proportion of price to wage, and of basing it on the realized rates—it is quite possible that though that base is the fairest, there may be room for improvement in the proportion or in the rate of the movement. It is only by the teachings of experience that the fairest proportion can be found; and thus it is not to be wondered at that the workmen should endeavor to amend the scale. That amendment can only be the result of negotiations between the parties to the arrangement, and though there are five months before the termination of the present arrangement, it is desirable that these negotiations should be early entered into. The experience of the past will be found valuable for the definition of the proportion of the future; for the continuance of the system is desirable on the grounds that it abolishes costly strikes; that it works automatically with little expense and without the suspicion of bias that might attach to an arbitration; and that it furnishes one of the most valuable of the masses of industrial statistics that are accumulating.

A Curious Patent Case.—An interesting case was decided recently by Judge Lowell in the United States Circuit Court, District of Rhode Island, in a suit of the New American File Company against the Nicholson File Company. The facts in the case are as follows: Etienne Bernot, of Paris, France, was the inventor of a machine for cutting files, and obtained a patent therefor in France August 31, 1854, and in Great Britain March 27, 1855. On July 3, 1860, he applied for a patent in the United States, which was granted July 24, 1860, for 14 years from that date. He assigned this American patent to George Somerville Norris, of Baltimore. On July 22, 1862, a private act of Congress was passed reciting the grant of the American patent, and enacting that it should be a valid grant for the full term of 14 years from its date, notwithstanding the fact that it ought to have been granted only for the term of 14 years from the date of the French patent. Bernot died in 1873, and his administrator, before the 23d of July, 1874, presented his petition to the Commissioner of Patents for an extension of the patent, and the Commissioner did extend it for the term of 7 years from July 24, 1874. The patent was duly assigned to the plaintiff corporation, and the defendant infringed it. Judge Lowell decides that under the circumstances named, the Commissioner possessed the power to extend the patent, and that the act of Congress must be so constructed that the patent was to be considered a good grant for 14 years from its date, with the usual right of the patentee to procure an extension. The demurrer of defendants was overruled.

Sheet zinc is being largely used in Germany for ceilings, especially where the beams for the upper floor are made of iron The used of wood is entirely dispensed with and excellent decorative effects are produced by stamping, painting and gilding or bronzing a portion of the ornaments.

Trade Report.

Office of The Iron Age,
Wednesday Evening, August 24, 1881.

Wall street markets have been unsettled during the week under review, caused by varied and often conflicting reports, but more especially by the sudden stringency in money, foreshadowed in our last, for which the majority of operators were totally unprepared. The depletion of the bank reserves noticed for some weeks past, the heavy absorption of funds by the Treasury, and the continued shipments West to cover enormous speculations in grain, altogether produced a violent change. Values became unsettled in every direction. On Thursday needy stock brokers were compelled to pay as high as 3-16ths of one per cent. a day on call loans, in addition to full legal rates. High rates for money brought fresh supplies from interior points, exchange became unsettled, and a new impetus was given to gold shipments from Europe, so that the week closed with comparative ease, 6 per cent. being the fair rate for the last two days. Stocks, however, sold down to about the lowest prices reached during the current decline. On Monday the critical condition of the President had a depressing influence, and the Gould stocks were severely raided. On Tuesday there was a partial recovery and a firmer tone on the announcement that the Secretary of the Treasury had ordered the payment of the outstanding 5 % registered bonds, due Oct. 1, without rebate.

As anticipated one week ago, the Bank of England on Monday advanced the discount rate from 2½ %, the rate for several months past, to 3 %; but without the effect of stopping the withdrawal of gold, as $2,000,000 were taken out on the succeeding day for shipment to America, and a further amount of $760,000 was withdrawn to-day. The stores of gold in the Bank of France are also diminishing, and according to the London *Times*, in its financial article this morning, "the rise in French exchange is likely to be followed by an advance in the Bank of France rate of discount."

The importations of specie and bullion at this port during the week ending Aug. 19 were $828,986, consisting of $813,047 in gold and $15,939 in silver, as against a total of $1,063,892 for the week ending Aug. 21 last year. The importations since the 1st of January and since the 1st of August compare as follows with the movement during the corresponding periods last year:

	Since January 1 — 1881.	1880.
Gold	$29,842,255	$5,546,811
Silver	1,833,909	3,413,657
Total	$31,676,164	$8,960,468
	Since August 1 — 1881.	1880.
Gold	$1,217,996	$3,572,444
Silver	79,980	219,151
Total	$1,297,976	$3,791,595

The bank statement shows a moderate reduction in loans, while the deposit liabilities are down $7,926,800. The effect of these changes is to wipe out the surplus reserve of the previous week, and to leave a deficiency of $717,700 in the conventional 25 per cent. reserve for all the banks. A year ago the banks held a surplus reserve of $7,317,925, all of which disappeared before November.

Money loaned as high as 6 1-64 and interest a day, and as low as 4 per cent. on general securities. Foreign Exchange was nominally lower, posted rates being down to 4.81½ and 4.84. State bonds were dull and neglected. To-day the stock market is improved. The cause for this strength is said to be due to Mr. Windom's clearly defined policy and to the announcement, made early in the day, that $2,000,000 of the called fives had been received at the Treasury to-day, and that $200,000 in specie were coming to this country on the French steamer that left Havre to-day.

The following is an analysis of the bank totals of this week compared with that of last week:

	Aug. 13.	Aug. 20.	Comparison.
Loans	$351,024,700	$349,542,800	Dec. $1,481,900
Specie	71,841,100	67,138,400	Dec. 4,702,700
Legal t'd'rs	15,927,000	15,842,800	Dec. 84,200
Tot. reserve	87,768,100	82,981,200	Dec. 4,786,900
Deposits	342,722,400	334,795,600	Dec. 7,926,800
Reserve required	85,680,600	83,698,900	Dec. 1,981,700
Surplus	2,087,500	717,700	Dec. 2,805,200
Circulation	19,486,000	19,566,000	Inc.. 80,000

Government bonds at the close were quoted as follows, the 4½s and Extended 5s and 6s having declined ⅛ during the day:

	Bid.	Asked.
U. S. 4½'s 1891 registered	112¾	113
U. S. 4½'s 1891 coupon	113⅞	114⅛
U. S. 4's 1907 registered	115⅜	115⅝
U. S. 4's 1907 coupon	115⅜	115⅝
U. S. Currency 6s 1895	130	—
U. S. Currency 6s 1896	130	—
U. S. Currency 6s 1897	131	—
U. S. Currency 6s 1898	132	—
U. S. Currency 6s 1899	133	—
"Sixes" continued	101⅝	101¾
"Fives" continued	101⅜	101⅝

MINING STOCKS.

The following were the closing quotations:

	Bid.	Asked.
American Flag	11	14
Amie	38	....
Alice	6.50	6.75
Alta Mont	1.70	1.95
Bechtel	1.00	1.10
Bell Isle	20	20
Bodie	8.50	....
Buckeye	8	9
Bulwer	2.25	3.00
Bull Dom	1.70	1.80
Bonanza C	13	....
Boulder	23	24
Boston	15	....
Big Pittsburgh	2.30	2.40
Bradshaw	1.00	1.05
Calaveras	13	14
California	1.05	1.10
Climax	47	50
Consolidated Imperial	17	19
Consolidated Pacific	55	63
Consolidated Virginia	2.10	2.15
Chrysolite	6.37½	6.62½
Cent. Ariz	2.00	2.05
Dahlonega	5	6
Eureka C	27.00	29.00
Findley	....	35
Granville	5	6
Gr. Prize	17	....
Goodshaw	58	....
Green Mountain	5.12½	....
Gold Str	85	96
Hukill	69	73
Horn Silver	13.00	13.75
Hibernia	47	....
Iron Silver	2.10	2.15
Lacrosse	26	28
Leadville	1.40	1.45
Little Pitts	2.50	2.75
L. Chief	1.40	1.45
Mariposa	2.25	2.75
Miner Boy	50	52
Navajo	50	60
North Star	14	....
Nor. Belle	....	16.25
N. Bell I.	30	35
Ori. and Mil	1.00	1.05
Rappah'k	21	....
Robinson	11.50	12.00
R. Sun	2.30	2.50
Red Eleph	16	20
S. Nevada	16.25	....
Silver Cliff	4.10	4.50
Sutro	1.45	1.50
Spr'g Val	2.50	3.00
Stormont	3.50	3.55
S. Bulwer	20	....
St. L. No. 4	96	1.10
St. Line No. 4	1.05	....
St. L. 1 and 4	1.00	1.05
St. L. 2 and 3	4.15	4.25
Tip Top	5.12½	5.50
Tioga	30	39
Union Con	13.50	....
Unadilla	9	10
Willshire	....	1.25

GENERAL HARDWARE.

The volume of business during the week was very satisfactory, and values continue steady, with, as we have recently remarked, an upward tendency in some lines of goods.

The demand for Nails has improved considerably since our last writing, and the tone of the market is firmer than we have seen it in a long time. We quote 10d. to 60d., $3.05 @ $3.15., net, according to quantity.

The manufacturers of Cast Butts held a meeting in this city to-day, at which prices were advanced about 10 per cent. We print below Sargent & Co.'s circular of this date, showing the revised discounts:

CAST BUTTS.

From this date our prices for Cast Butts will be as follows:

Page in 1880 Catalogue.		Discount per cent.
2,	No. 20, Fast Joint Butts	40
3,	No. 21, " " Japanned	40
4,	No. 50, Loose Joint Butts	50
5,	No. 51, " " Japanned	50
6,	No. 52, L. J. Acorn Butts	40
	No. 53, " " Japanned	50
	No. 56, " " "	50
7,	No. 58, " "	50
	No. 59, " " Japanned	50
8,	No. 60, Loose Joint Butts	50
	No. 61, " " Japanned	50
9,	No. 62, L. J. Acorn Butts	40
	No. 63, " " Japanned	50
	No. 66, " " "	50
10,	No. 68, " " "	50
	No. 69, " " "	50
11,	No. 40, Loose Pin Butts	50
12,	No. 42, " "	50
	Nos. 43, 46, " "	55
13,	No. 142, " "	50
	Nos. 143, 146, " "	55
14,	No. 32, " "	50
	No. 137, " "	75
27,	Mayer's Hinges	50
27,	No. 290, Parliament Butts	55
28,	Acorn Tip " "	50

Ten per cent. extra discount for prompt cash.

Sargent & Co.,
New York and New Haven, Conn.
New York, August 24, 1881.

At a meeting of the manufacturers of Machine Bolts, Nuts, Washers, &c., held at Coney Island on the 17th inst., the prices of these goods were advanced as follows: Machine Bolts, Bolt Ends, Lag Screws and Skein Screws, discount 60 per cent.; Square and Hexagon Nuts, 7½ cents off list; Plate Washers, 7 cents off list. Terms, cash.

The Ligonia Iron Company, Portland, Me., offer for sale or lease their real estate, machinery, tools, &c. Particulars regarding the property will be found in their advertisement on the opposite page.

P. & F. Corbin, New Britain, Conn., and No. 87 Chambers street, New York, have recently added to their assortment of Hardware specialties a full line of Cabinet Locks, for which the following comparative price list has been issued. The list is subject to discount 60 per cent. for Cabinet Locks and 25 per cent. discount for Cabinet Lock Keys:

P. & F. Corbin's Comparative List of Cabinet Locks.

Numbers Numerically Arranged.

Corbin.	Per doz.	Eagle.	Gaylord.
0	$0.60	0	....
2	3.50	2	....
5 3k	.70	5	170
5 4k	.74	5	170
5 6k	.82	5	170
5 12k	1.00	5	170
9	6.00	9	11
11	1.75	11	41
17	2.50	17	171
18	2.25	18	172
23 3k	1.00	23	181
23 4k	1.03	23	181
23 6k	1.10	23	181
23 12k	1.30	23	181
25 3k	1.16	25	179
25 4k	1.19	25	179
25 6k	1.25	25	179
25 12k	1.37	25	179
26 3k	.58	26	182
26 4k	.61	26	182
26 6k	.67	26	182
26 12k	.84	26	182
27 3k	.70	27	180
27 4k	.73	27	180
27 6k	.80	27	180
27 12k	.95	27	180
31	1.20	31	58
33	.95	33	197
34	.75	34	67
35	1.00	35	66
36	1.00	36	195
37	2.25	37	64
39	3.00	585	32
39½	3.50	584	31
40	1.88	40	189
42	.75	42	75
43	.75	43	71
44	1.62	44	113
45	.95	45	68
46	.75	46	199
47 3k	1.60	47	168
47 4k	1.64	47	168
47 6k	1.72	47	168
47 12k	1.87	47	168
48 3k	.84	48	169
48 4k	.87	48	169
48 6k	.92	48	169
48 12k	1.12	48	169
49 3k	.90	49	162
49 4k	.94	49	162
49 6k	1.00	49	162
49 12k	1.20	49	162
50	2.00	50	40
52 3k	1.85	52	161
52 4k	1.88	52	161
52 6k	1.94	52	161
52 12k	2.12	52	161
55	.68	55	72
60 3k	.84	60	191
60 4k	.88	60	191
60 6k	.92	60	191
60 12k	1.12	60	191
64	1.88	64	65
65	1.50	65	48
66	2.12	66	173
67	2.00	67	174
68 3k	.82	68	187
68 4k	.86	68	187
68 6k	.94	68	187
68 12k	1.10	68	187
71	.88	71	196
72 3k	.40	72	188
72 4k	.43	72	188
72 6k	.50	72	188
72 12k	.66	72	188
75	1.50	75	54
78	3.50	78	....
80 3k	1.42	80	176
80 4k	1.46	80	176
80 6k	1.54	80	175
80 12k	1.70	80	176
81 3k	.95	81	178
81 4k	.98	81	178
81 6k	1.04	81	178
81 12k	1.20	81	178
83	2.75	83	39
87	2.62	87	....
88	2.25	88	....
89	1.38	89	190
91	4.75	91	10
92	4.00	92	36
93	3.25	93	38
95	1.10	95	55
97 3k	.66	97	193
97 4k	.69	97	193
97 6k	.75	97	193
97 12k	.93	97	193
98 3k	.40	98	183
98 4k	.49	98	183
98 6k	.55	98	183
98 12k	.72	98	183
103	1.75	103	49
105	2.50	105	61
113	9.00	113	7
116	1.25	116	114
133	1.12	133	59
134	3.00	134	32
135	.68	135	200
138	.75	138	198
139	.75	139	69
141	1.00	141	50
142	1.25	142	42
143	1.00	143	100
146	6.00	146	77
146½	4.75	156	78
147	4.75	147	81
148	4.00	148	89
149	8.00	149	76
150	6.50	150	80
151	5.50	151	88
154	2.00	154	....
155	1.25	155	45
157	4.00	157	82
158	3.25	158	90
159	13.00	159	5
160	2.37	160	46
161 3k	1.00	161	224
161 4k	1.03	161	224
161 6k	1.10	161	224
161 12k	1.30	161	224
162 3k	1.32	162	167
162 4k	1.36	162	167
162 6k	1.42	162	167
162 12k	1.62	162	167
163	2.25	163	53
164	2.62	164	56
165	2.75	165	52
166	2.12	166	57
167	2.00	167	62
168	2.62	168	44
173	2.50	173	79
174	2.25	174	83
176	4.00	176	154
177	3.25	177	155
180 3k	1.20	180	223
180 4k	1.24	180	223
180 6k	1.30	180	223
180 12k	1.50	180	223
181	2.25	181	...
182	1.87	182	37
185 3k	1.20	185	220
185 4k	1.24	185	220
185 6k	1.30	185	220
185 12k	1.50	185	220
186 3k	1.80	186	221
186 4k	1.84	186	221
186 6k	1.90	186	221
186 12k	2.10	186	221
187 3k	1.10	187	222
187 4k	1.14	187	222
187 6k	1.20	187	222
187 12k	1.40	187	222
189	2.38	189	35½
198	3.50	198	140½
199	4.50	199	141½
202	5.00	202	...
203	4.50	203	301
218	8.00	218	6
219	6.00	219	11
220 3k	1.50	220	...
220 4k	1.54	220	...
220 6k	1.60	220	...
220 12k	1.80	220	...
0220	13.00	0220	135
0221	11.50	0221	136
0222	10.00	0222	137
0224	10.00	0224	145
0225	9.00	0225	146
0226	7.50	0226	...
0228	8.00	0228	148
0229	7.00	0229	149
237	3.25	237	152½
238	4.00	238	151½
240 3k	1.50	240	219
240 4k	1.54	240	219
240 6k	1.60	240	219
240 12k	1.80	240	219
251	18.00	251	2
252	15.50	252	3
253	14.50	253	4
255	17.00	255	13
256	15.00	256	14
257	13.50	257	15
258	11.00	258	24
259	10.00	259	25
261	15.50	261	131
262	13.50	262	132
263	12.00	263	133
264	10.50	264	...
265	11.00	265	142
266	10.00	266	143
267	9.50	267	...
269	9.00	269	35
271	15.00	271	101
272	14.00	272	102
273	13.00	273	103
275	9.50	275	156
276	8.75	276	157
277	8.00	277	...
290	16.00	290	18
291	14.50	291	19
292	12.75	292	20
293	11.00	293	320
294	10.00	294	321
296	2.00	296	270
300	3.25	300	..
301	3.00	301	...
302	2.75	302	...
303	2.50	303	...
310	2.62	310	...
311	2.25	311	...
312	2.00	312	...
313	1.75	313	...
320 3k	2.30	320	...
320 4k	2.35	320	...
320 6k	2.45	320	...
320 12k	2.75	320	...
330	3.12	330	...
331	3.00	331	...
332	2.75	332	...
333	2.62	333	...
340	2.50	340	...
341	2.37	341	...
342	2.25	342	...
343	2.12	343	...
350	3.25	350	438
362	8.00	362	...
365	5.00	365	151
368	4.00	368	151½
369	3.25	369	152½
370	3.50	370	....
371	6.00	371	....
373	6.00	373	....
374	3.00	374	....
375	7.00	375	....
377	7.00	377	....
37	....	...	....
380	2.25	380	....
382	4.75	382	....
383	9.00	383	....
384	4.75	384	....
385	$9.00	385	....
386	5.00	386	....
387	5.50	387	...
388	6.00	388	....
389	6.50	389	....
391	2.00	391	356
392	1.75	392	366
393	1.62	393	379
394	3.50	394	....
395	2.75	395	....
396	2.50	396	....
400	3.50	400	....
401	4.00	401	105
402	4.00	402	152
403	4.75	403	....
404	4.50	404	140
405	5.50	405	141
406	4.50	406	....
407	5.00	407	....
408	4.50	408	17
409	6.50	409	16
410	4.00	410	22
411	4.50	411	21
413	5.00	413	151
414	4.75	414	....
415	1.50	415	96
416	2.00	416	95
417	1.60	417	94
418	2.25	418	93
419	2.00	419	85
420	3.00	420	84
423 3k	.46	423	490
423 4k	.49	423	490
423 6k	.55	423	490
423 12k	.72	423	490
425	7.00	425	8
426	10.00	426	7
427	3.50	427	....
428	4.00	428	....
431	1.50	431	....
432	1.35	...	....
438	1.50	438	....
445	1.25	445	....
452	3.25	452	....
453	4.25	453	....
454	3.00	454	160½
455	4.00	455	160
456	6.00	456	....
457	5.50	457	138
458	4.25	458	....
459	4.75	459	....
461	3.75	461	....
462	4.25	462	....
464	3.37	464	....
465	3.87	465	....
467	3.25	467	....
468	3.75	468	....
469	3.12	469	....
470	3.62	470	....
471	3.00	471	....
472	3.50	472	....
473	2.25	473	....
474	2.25	474	....
475	2.25	475	....
476	2.25	476	....
477	2.75	477	....
486	4.00	486	....
487	4.50	487	....
488	5.00	488	...
489	5.50	489	....
500	1.87	500	87½
508	2.00	508	98
509	1.50	509	....
510	1.00	510	369
574	10.00	574	306
575	10.00	575	307
576	10.00	576	510
577	9.00	577	511
578	9.00	578	530
579	8.00	579	531
580	8.00	580	550
581	7.00	581	551
582	6.25	582	315
583	4.75	583	316
600	6.00	600	....
601	6.50	601	....
602	7.00	602	....
603	7.50	603	....
800	1.00	...	74
810	2.00	...	....
1000 A	3.90	1000 A	....
1000 B	3.70	1000 B	....
1000 C	3.50	1000 C	....
1000 D	3.30	1000 D	....
1000 E	3.10	1000 E	....
1000 F	2.90	1000 F	....
1000 G	2.70	1000 G	....
1000 H	2.50	1000 H	....
1000 I	2.30	1000 I	....
1000 K	2.10	1000 K	....
1000 L	2.00	1000 L	....
1000 M	1.90	1000 M	....
1000 N	1.80	1000 N	....
1000 O	1.80	1000 O	....
1000 P	1.80	1000 P	....
1000 Q	1.80	1000 Q	....
1001 A	3.60	1001 A	200¼
1001 B	3.40	1001 B	200½
1001 C	3.20	1001 C	201
1001 D	3.00	1001 D	202
1001 E	2.80	1001 E	203
1001 F	2.60	1001 F	204
1001 G	2.40	1001 G	205
1001 H	2.20	1001 H	206
1001 I	2.00	1001 I	207
1001 K	1.80	1001 K	208
1001 L	1.70	1001 L	209
1001 M	1.60	1001 M	210
1001 N	1.50	1001 N	....
1001 O	1.50	1001 O	....
1001 P	1.50	1001 P	....
1001 Q	1.50	1001 Q	....
1001 2¼	2.00	1001 2¼	....
1001 2	1.80	1001 2	....
1001 1¾	1.70	1001 1¾	....
1001 1½	1.60	1001 1½	....
1001 1¼	1.50	1001 1¼	....
1001 1	1.50	1001 1	....
1001 ⅞	1.50	1001 ⅞	....
1001 ¾	1.50	1001 ¾	....
1005 A	3.30	1005 A	....
1005 B	3.10	1005 B	....
1005 C	2.90	1005 C	....
1005 D	2.70	1005 D	....
1005 E	2.50	1005 E	....
1005 F	2.30	1005 F	....
1005 G	2.10	1005 G	....
1005 H	1.90	1005 H	....
1005 I	1.70	1005 I	....
1005 K	1.50	1005 K	....
1005 L	1.40	1005 L	....
1005 M	1.30	1005 M	....
1005 N	1.20	1005 N	....
1005 O	1.20	1005 O	....
1005 P	1.20	1005 P	....
1005 Q	1.20	1005 Q	....
1015 A	10.00	1015 A	....
1015 B	9.50	1015 B	....
1015 C	9.00	1015 C	....
1015 D	8.50	1015 D	....
1015 E	8.00	1015 E	....
1015 F	7.50	1015 F	....
1015 G	7.00	1015 G	....
1015 H	6.50	1015 H	....
1015 I	6.00	1015 I	....
1015 K	5.50	1015 K	....
1015 L	5.00	1015 L	....
1015 M	4.75	1015 M	....
1017 A	2.60	1017 A	....
1017 B	2.40	1017 B	....
1017 C	2.30	1017 C	....
1017 D	2.20	1017 D	....
1017 E	2.10	1017 E	....
1017 F	2.00	1017 F	....
1018 A	2.30	1018 A	....
1018 B	2.10	1018 B	....
1018 C	2.00	1018 C	....
1018 D	1.90	1018 D	....
1018 E	1.80	1018 E	....
1018 F	1.70	1018 F	....
1019 A	2.00	1019 A	....
1019 B	1.80	1019 B	....
1019 C	1.70	1019 C	....
1019 D	1.60	1019 D	....
1019 E	1.50	1019 E	....
1019 F	1.40	1019 F	....
6000	5.75	6000	20½
6001	7.[illegible]	6001	....
6002	8.50	6002	....
6003	9.00	6003	....
6004	9.75	6004	....
6005	10.50	6005	....
6006	9.00	6006	....
6007	9.50	6007	....
6008	10.25	6008	....
6009	11.00	6009	....
6015	1.50	512	....
6017	6.50	6017	....
6018	7.00	6018	....
6020	12.00	6020	....
6021	11.00	6021	....
6022	10.00	6022	134
6023	9.00	6023	....
6024	11.00	6024	....
6025	10.00	6025	....
6026	9.00	6026	....
6027	8.00	6027	....
6028	10.00	6028	....
6029	9.00	6029	....
6030	8.00	6030	....
6031	7.00	6031	....
6032	11.00	6032	....
6033	10.00	6033	....
6034	9.00	6034	....
6035	8.00	6035	....
6036	10.00	6036	....
6037	9.00	6037	....
6038	8.00	6038	....
6039	7.00	6039	....
6040	9.00	6040	....
6041	8.00	6041	....
6042	7.00	6042	....
6043	6.00	6043	....
6056	4.75	6056	....
6057	4.00	6057	....
6058	3.25	6058	106
6059	3.00	6059	....
6060	4.50	6060	....
6061	3.75	6061	....
6062	3.00	6062	107
6063	2.75	6063	....
6064	5.50	6064	....
6065	4.00	6065	....
6067	3.50	6067	....
6068	18.00	6068	....
6069	16.00	6069	....
6070	14.00	6070	....
6071	12.00	6071	....
6072	12.00	6072	....
6073	10.00	6073	....
6074	9.00	6074	....
6074½	9.00	....	....
6075	9.00	6075	....
6076	8.00	6076	....
6077	8.50	....	....
6078	9.00	....	....
6080	5.00	6080	....
6081	7.00	....	....
6086	10.50	....	....
6087	9.00	6087	....
6088	7.50	6088	....
6089	6.50	....	....

CHEST LOCKS.

Corbin.	Pr. doz.	Size. Inch.	Keyed.	Eagle.	Gaylord.
2	$3.50	4	12	2	....
9	6.00	4	12	9	11
11	1.75	3½	12	11	41
31	1.20	2½	12	31	58
34	.75	2	12	34	67
35	1.00	2	12	35	66
37	2.25	2	12	37	64
39	3.00	2	12	585	32
39½	3.50	2	12	584	31
42	.75	1¼	12	42	75
43	.75	1½	12	43	71
45	.95	1¾	12	45	68
50	2.00	3½	12	50	40
55	.68	1½	12	55	72
64	1.88	2	12	64	65
65	1.50	3	12	65	48
75	1.50	2¾	12	75	54
83	2.75	3½	12	83	39
91	4.75	4	12	91	10
92	4.00	4	12	92	36
93	3.25	3½	12	93	38
95	1.10	2¾	12	95	55
103	1.75	3	12	103	49
105	2.50	2¼	12	105	61
113	9.00	4	12	113	7
133	1.12	2⅛	12	133	59
134	3.00	2	12	134	32
139	.75	1¾	12	139	69
141	1.00	3	12	141	50
142	1.25	3½	12	142	42
154	2.00	3¾	12	154	....
155	1.25	3¼	12	155	45
159	13.00	4	12	159	5
160	2.37	3	12	160	46
163	2.25	2¾	12	163	53
164	2.62	2½	12	164	56
165	2.75	2¾	12	165	52
166	2.12	2½	12	166	57
167	2.00	2¼	12	167	62
168	2.62	3¼	12	168	44
181	2.25	1⅛	12	181	....
182	1.87	4	12	182	37
189	2.38	1¼	12	189	35½
202	5.00	4	12	202	....
203	4.50	4	12	203	301
218	8.00	4	12	218	6
219	6.00	4	12	219	11
251	18.00	4	24	251	2
252	15.50	4	12	252	3
253	14.50	4	12	253	4
255	17.00	3½	24	255	13
256	15.00	3½	12	256	14
257	13.50	3½	12	257	15
258	11.00	2½	12	258	24
259	10.00	2½	12	259	25
269	9.00	1⅞	12	269	35
290	16.00	3	12	290	18
291	14.50	3	12	291	19
292	12.75	3	12	292	20
293	11.00	2	12	293	320
294	10.00	2	12	294	321
296	2.00	2½	12	296	270
408	4.50	3½	12	408	17
409	6.50	3½	11	409	16
410	4.00	3	12	410	22
411	4.50	3	12	411	21
425	7.00	4	12	425	8
426	10.00	4	12	426	7
427	3.50	2½	12	427	...
428	4.00	2½	12	428	....
458	4.25	3¾	12	458	....
459	4.75	3¾	12	459	....
461	3.75	2¾	12	461	....
462	4.25	2¾	12	462	....
464	3.37	2½	12	464	....
465	3.87	2¾	12	465	....
467	3.25	2	12	467	...
468	3.75	2	12	468	....
469	3.12	1¾	12	469	....
470	3.62	1¾	12	470	....
471	3.00	1½	12	471	....
472	3.50	1½	12	472	....
574	10.00	4	12	574	306
575	10.00	4	11	575	307
			Nickel.		
576	10.00	3½	12	576	510
577	9.00	3½	12	577	511
578	9.00	3	12	578	530
579	8.00	3	12	579	531
580	8.00	2½	12	580	550
581	7.00	2½	12	581	551
582	6.25	2½	12	582	315
583	4.75	2½	12	583	316
6000	5.75	3	12	6000	20½
6068	18.00	4	24	6068	....
6069	16.00	3½	24	6069	....
6070	14.00	3	24	6070	....
6071	12.00	2½	24	6071	...
6086	10.50	2¼	24	....	....
6087	9.00	2	24	6087	....
6088	7.50	1¾	24	6088	....
6089	6.50	1⅝	24	....	....

All except Nos. 9, 218, and 219, one dozen in a box. Nos. 9, 218 and 219, half dozen in a box.

CUPBOARD LOCKS.

Corbin.	Per dz.	Size. Inch.	Keyed.	Eagle.	Gaylord.
44	$1.62	3	12	44	113
87	2.62	3	12	87	....
88	2.25	3	12	88	....

Corbin.	Per doz	Size. Inch.	Keyed.	Eagle.	Gaylord.
116	1.25	3	12	116	114
143	1.00	3	12	143	100
271	15.00	3	12	271	101
272	14.00	3	12	272	102
273	13.00	3	12	273	103
330	3.12	3	12	330	....
331	3.00	2¾	12	331	....
332	2.75	2½	12	332	....
333	2.62	2¼	12	333	....
340	2.50	3	12	340	....
341	2.37	2¾	12	341	....
342	2.25	2½	12	342	....
343	2.12	2¼	12	343	....
350	3.25	3	12	350	438
400	3.50	3	12	400	....
401	4.00	3	12	401	105
406	4.50	3	12	406	....
407	5.00	3	12	407	....
473	2.25	2¾	12	473	....
474	2.25	2¾	12	474	....
475	2.25	2¾	12	475	....
476	2.25	2¾	12	476	....
477	2.75	2¾	12	477	....
1001	....	2½	....	1001	....
1001	2.00	2¼ (To Key Pin.)	....	1001	....
1001	1.80	2	....	1001	....
1001	1.70	1¾	....	1001	....
1001	1.60	1½	....	1001	....
1001	1.50	1¼	....	1001	....
1001	1.50	1	....	1001	....
1001	1.50	⅞	....	1001	....
1001	1.50	¾	....	1001	....
1017	....	3	....	1017	....
1017 A	2.60	1½ (To K.P.)	....	1017 A	....
1017 B	2.40	1¼	....	1017 B	....
1017 C	2.30	1⅛	....	1017 C	....
1017 D	2.20	1	....	1017 D	....
1017 E	2.10	⅞	....	1017 E	....
1017 F	2.00	¾	....	1017 F	....
1018	....	3	....	1018	....
1018 A	2.50	1½ (To K.P.)	....	1018 A	....
1018 B	2.10	1¼	....	1018 B	....
1018 C	2.00	1⅛	....	1018 C	....
1018 D	1.90	1	....	1018 D	....
1018 E	1.80	⅞	....	1018 E	....
1018 F	1.70	¾	....	1018 F	....
1019	....	3	....	1019	...
1019 A	2.00	1½ (To K.P.)	....	1019 A	..
1019 B	1.80	1¼	....	1019 B	....
1019 C	1.70	1⅛	...	1019 C	....
1019 D	1.60	1	....	1019 D	...
1019 E	1.50	⅞	....	1019 E	....
1019 F	1.40	¾	....	1019 F	...
6056	4.75	2¾	12	6056	...
6057	4.00	2¾	12	6057	....
6058	3.25	2¾	12	6058	106
6059	3.00	2¾	12	6059	....
6060	4.50	2½	12	6060	....
6061	3.73	2½	12	6061	....
6062	3.00	2½	12	6062	107
6063	2.75	2½	12	6063	....
6075	9.00	3	24	6075	....

One dozen in a box.

Nos. 1017, 1018 and 1019 are Listed without Keys or Tubes. For Tubes, add 30 cents. For Keys, add 30 cents to List Prices. Nos. 6056 and 6060 can be furnished with 360 changes, all different, at an advance of $1.50 to list.

WARDROBE LOCKS.

Corbin.	Pr doz.	Size. Inch.	Keyed.	Eagle.	Gaylord.
146	$6.00	4	12	146	77
146½	4.75	4	12	156	78
147	4.75	3½	12	147	81
148	4.00	3	12	148	89
149	8.00	4	12	149	76
150	6.50	3½	12	150	80
151	5.50	3	12	151	88
157	4.00	3½	12	157	82
158	3.25	3	12	158	90
173	2.50	4	12	173	79
174	2.25	3½	12	174	83
391	2.00	4	12	391	356
392	1.75	3½	12	392	366
393	1.62	3	12	393	379
394	3.50	4	12	394	....
395	2.75	3½	12	395	....
396	2.50	3	12	396	....
415	1.50	2½	12	415	96
416	2.00	2½	12	416	95
417	1.60	2¾	12	417	94
418	2.25	2¾	12	418	93
419	2.00	3½	12	419	85
420	3.00	3½	12	420	84
500	1.87	3½	12	500	87½
508	2.00	1⅞	12	508	98
509	1.50	1⅞	12	509	....
510	1.00	3	12	510	369
6064	5.50	3	12	6064	....
6065	4.00	3	12	6065	....
6067	3.50	2¾	12	6067	....
6072	12.00	4	24	6072	....
6073	10.00	3½	24	6073	....
6074	9.00	3	24	6074	....
6074½	9.00	3	24	....	....

One dozen in a box.

Nos. 6064 and 6065 are with Deep Box and four Tumblers.

TILL AND DRAWER LOCKS.

Corbin.	Per doz	Size. Inch.	Keyed.	Eagle.	Gaylord.
5	$0.70	2¾	3	5	170
5	.74	2¾	4	5	170
5	.82	2¾	6	5	170
5	1.00	2¾	12	5	170
17	2.50	2½	12	17	171
18	2.25	2½	12	18	172
23	1.00	2½	3	23	181
23	1.03	2½	4	23	181
23	1.10	2½	6	23	181
23	1.30	2½	12	23	181
25	1.16	2½	3	25	179
25	1.19	2½	4	25	179
25	1.25	2½	6	25	179
25	1.37	2½	12	25	179
26	.58	2½	3	26	182
26	.61	2½	4	26	182
26	.67	2½	6	26	182
26	.84	2½	12	26	182
27	.70	2½	3	27	180
27	.73	2½	4	27	180
27	.80	2½	6	27	180
27	.95	2½	12	27	180
33	.95	1¾	12	33	197
36	1.00	2	12	36	195
40	1.88	2¼	12	40	189
46	.75	1½	12	46	199
47	1.60	2¾	3	47	168
47	1.64	2¾	4	47	168
47	1.72	2¾	6	47	168
47	1.87	2¾	12	47	168
48	.84	2¾	3	48	169
48	.87	2¾	4	48	169
48	.92	2¾	6	48	169
48	1.12	2¾	12	48	169
49	.90	3	3	49	162
49	.94	3	4	49	162
49	1.00	3	6	49	162
49	1.20	3	12	49	162
52	1.85	3	3	52	161
52	1.88	3	4	52	161
52	1.94	3	6	52	161
52	2.12	3	12	52	161
60	.84	2¼	3	60	191
60	.88	2¼	4	60	191
60	.92	2¼	6	60	191
60	1.12	2¼	12	60	191
66	2.12	2½	12	66	173
67	2.00	2½	12	67	174
68	.82	2½	3	68	187
68	.86	2½	4	68	187
68	.94	2½	6	68	187
68	1.10	2½	12	68	187
71	.88	2	12	71	196
72	.40	2½	3	72	188
72	.43	2½	4	72	188
72	.50	2½	6	72	188
72	.66	2½	12	72	188

Corbin.	Per doz	Size. Inch.	Keyed.	Eagle.	Gaylord.
80	1.42	2½	3	80	176
80	1.46	2½	4	80	176
80	1.54	2½	6	80	176
80	1.70	2½	12	80	176
81	.95	2½	3	81	178
81	.98	2½	4	81	178
81	1.04	2½	6	81	178
81	1.20	2½	12	81	178
89	1.38	2¼	12	89	190
97	.66	2¼	3	97	193
97	.69	2¼	4	97	193
97	.75	2¼	6	97	193
97	.93	2¼	12	97	193
98	.46	2½	3	98	183
98	.49	2½	4	98	183
98	.55	2½	6	98	183
98	.72	2½	11	98	183
135	.68	1½	12	135	200
138	.75	1¾	12	138	198
161	1.00	2½	3	161	224
161	1.03	2½	4	161	224
161	1.10	2½	6	161	224
161	1.30	2½	12	161	224
162	1.32	2¾	3	162	167
162	1.36	2¾	4	162	167
162	1.42	2¾	6	162	167
162	1.62	2¾	12	162	167
176	4.00	2¼	12	176	154
177	3.25	2¼	12	177	155
180	1.20	2½	3	180	223
180	1.24	2½	4	180	223
180	1.30	2½	6	180	223
180	1.50	2½	12	180	223
185	1.20	2½	3	185	220
185	1.24	2½	4	185	220
185	1.30	2½	6	185	220
185	1.50	2½	12	185	220
186	1.80	2½	3	186	221
186	1.84	2½	4	186	221
186	1.90	2½	6	186	221
186	2.10	2½	12	186	221
187	1.10	2½	3	187	222
187	1.14	2½	4	187	222
187	1.20	2½	6	187	222
187	1.40	2½	12	187	222
198	3.50	2¾	12	198	140½
199	4.50	2¾	12	199	141½
220	1.50	2½	3	220	....
220	1.54	2½	4	220	....
220	1.60	2½	6	220	....
220	1.80	2½	12	220	....
0220	13.00	2¾	12	0220	135
0221	11.50	2¾	12	0221	136
0222	10.00	2¾	12	0222	137
0224	10.00	2½	12	0224	145
0225	9.00	2½	12	0225	146
0226	7.50	2½	12	0226	....
0228	8.00	2½	12	0228	148
0229	7.00	2½	12	0229	149
237	3.25	2½	12	237	152½
238	4.00	2½	12	238	151½
240	1.50	2½	3	240	219
240	1.54	2½	4	240	219
240	1.60	2½	6	240	219
240	1.80	2½	12	240	219
261	15.50	2¾	24	261	131
262	13.50	2¾	12	262	132
263	12.00	2¾	12	263	133
264	10.50	2½	12	264	....
265	11.00	2½	12	265	142
266	10.00	2½	12	266	143
267	9.50	2½	12	267	....
275	9.50	2	12	275	156
276	8.75	2	12	276	157
277	8.00	2	12	277	....
300	3.25	2¾	12	300	....
301	3.00	2½	12	301	....
302	2.75	2¼	12	302	....
303	2.50	2	12	303	....
310	2.62	2¾	12	310	....
311	2.25	2½	12	311	....
312	2.00	2¼	12	312	...
313	1.75	2	12	313	....
320	2.30	2¾	3	320	....
320	2.35	2¾	4	320	....
320	2.45	2¾	6	320	....
320	2.75	2¾	12	320	....
362	8.00	2¾	12	362	....
365	5.00	2½	12	365	151
368	4.00	2½	12	368	151½
369	3.25	2½	12	369	152½
370	3.50	2	12	370	....
374	3.00	2	12	374	....
402	4.00	2½	12	402	152
403	4.75	2½	12	403	...
404	4.50	2¾	12	404	140
405	5.50	2¾	12	405	141
413	5.00	2½	12	413	151
414	4.75	2½	12	414	....
423	.46	2¾	3	423	490
423	.49	2¾	4	423	490
423	.55	2¾	6	423	490
423	.72	2¾	12	423	490
452	3.25	2	12	452	....
453	4.25	2	12	453	....
454	3.00	2	12	454	160½
455	4.00	2	12	455	160
456	6.00	2¾	12	456	....
457	5.50	2¾	12	457	138
1000	....	2½	12	1000	....
1000 A	3.90	4½ (To center of Keyhole.)	....	1000 A	....
1000 B	3.70	4¼	....	1000 B	...
1000 C	3.50	4	....	1000 C	....
1000 D	3.30	3¾	....	1000 D	....
1000 E	3.10	3½	....	1000 E	....
1000 F	2.90	3¼	....	1000 F	....
1000 G	2.70	3	....	1000 G	....
1000 H	2.50	2¾	....	1000 H	....
1000 I	2.30	2½	....	1000 I	....
1000 K	2.10	2¼	....	1000 K	....
1000 L	2.00	2	....	1000 L	....
1000 M	1.90	1¾	....	1000 M	....
1000 N	1.80	1½	....	1000 N	....
1000 O	1.80	1¼	....	1000 O	....
1000 P	1.80	1⅛	....	1000 P	....
1000 Q	1.80	1	....	1000 Q	....
1001	....	2½	....	1001	....
1001 A	3.60	4½ (To center of Keyhole.)	....	1001 A	200¼
1001 B	3.40	4¼	....	1001 B	200½
1001 C	3.20	4	....	1001 C	201
1001 D	3.00	3¾	....	1001 D	202
1001 E	2.80	3½	....	1001 E	203
1001 F	2.60	3¼	....	1001 F	204
1001 G	2.40	3	....	1001 G	205
1001 H	2.20	2¾	....	1001 H	206
1001 I	2.00	2½	....	1001 I	207
1001 K	1.80	2¼	....	1001 K	208
1001 L	1.70	2	....	1001 L	209
1001 M	1.60	1¾	....	1001 M	210
1001 N	1.50	1½	....	1001 N	....
1001 O	1.50	1¼	....	1001 O	....
1001 P	1.50	1⅛	....	1001 P	....
1001 Q	1.50	1	...	1001 Q	....
1005	....	2½	....	1005	....
1005 A	3.30	4½ (To center of Keyhole.)	....	1005 A	....
1005 B	3.10	4¼	....	1005 B	....
1005 C	2.90	4	....	1005 C	....
1005 D	2.70	3¾	....	1005 D	....
1005 E	2.50	3½	....	1005 E	....
1005 F	2.30	3¼	....	1005 F	....
1005 G	2.10	3	...	1005 G	....
1005 H	1.90	2¾	...	1005 H	....
1005 I	1.70	2½	....	1005 I	....
1005 K	1.50	2¼	....	1005 K	....
1005 L	1.40	2	....	1005 L	....
1005 M	1.30	1¾	....	1005 M	....
1005 N	1.20	1½	....	1005 N	....
1005 O	1.20	1¼	....	1005 O	....
1005 P	1.20	1⅛	....	1005 P	....
1005 Q	1.20	1	....	1005 Q	....
1015	....	2½	....	1015	....
1015 A	10.00	3½ (To center of K. Pin.)	12	1015 A	....
1015 B	9.50	3¼	12	1015 B	...
1015 C	9.00	3	....	1015 C	....
1015 D	8.50	2¾	...	1015 D	....
1015 E	8.00	2½	....	1015 E	....
1015 F	7.50	2¼	....	1015 F	...
1015 G	7.00	2	....	1015 G	...
1015 H	6.50	1¾	....	1015 H	....
1015 I	6.00	1½	....	1015 I	....
1015 K	5.50	1¼	....	1015 K	....
1015 L	5.00	1	....	1015 L	....
1015 M	4.75	⅞	....	1015 M	....
6001	7.50	2¾	24	6001	....
6002	8.50	2½	24	6002	....
6003	9.00	2½	24	6003	....
6004	9.75	2½	24	6004	....
6005	10.50	2½	24	6005	....
6006	9.00	2½	24	6006	....
6007	9.50	2½	24	6007	....
6008	10.25	2½	24	6008	....
6009	11.00	2½	24	6009	....
6017	6.50	2¾	24	6017	....
6018	7.00	2¾	24	6018	....
6020	12.00	2¾	24	6020	....
6021	11.00	2¾	24	6021	....
6022	10.00	2¾	24	6022	134
6023	9.00	2¾	24	6023	..

Corbin.	Per doz	Size. Inch.	Keyed.	Eagle.	Ga
6024	11.00	2¾	24	6024	....
6025	10.00	2¾	24	6025	....
6026	9.00	2¾	24	6026	....
6027	8.00	2¾	24	6027	....
6028	10.00	2¾	24	6028	....
6029	9.00	2¾	24	6029	....
6030	8.00	2¾	24	6030	....
6031	7.00	2¾	24	6031	....
6032	11.00	2¾	24	6032	....
6033	10.00	2¾	24	6033	....
6034	9.00	2¾	24	6034	....
6035	8.00	2¾	24	6035	....
6036	10.00	2¾	24	6036	....
6037	9.00	2¾	24	6037	....
6038	8.00	2¾	24	6038	....
6039	7.00	2¾	24	6039	....
6040	9.00	2¾	24	6040	....
6041	8.00	2¾	24	6041	....
6042	7.00	2¾	24	6042	....
6043	6.00	2¾	24	6043	....
6080	5.00	1¾	24	6080	....
6081	7.00	1¾	24	....	...

One dozen in a box.

Nos. 1000, 1001 and 1005 are Listed without Keys. If ordered with Keys, add price of Keys.

Nos. 6001 to 6018 are made with 1000 changes, to order, at $2 added to List.

Nos. 6020 to 6043 are with Single Key Holes, for Drawers only, but can be furnished with Double Key Hole, suitable for either Drawer or Cupboard, at the same price. In ordering, please specify Double Key Hole, if so wanted, otherwise Single will be sent. These locks are made extra heavy and highly finished, and furnished with finely finished Keys, and can be made with 1200 changes, at $2 advance on List.

PIANO FORTE AND SEWING MACHINE LOCKS.

Corbin.	Pr doz.	Size. Inch.	Keyed.	Eagle.	Gaylord.
0	$0.60	1½	3	0	....
431	1.50	2½	12	431	....
432	1.35	2⅛	12	....	....
438	1.50	3	24	438	....
810	2.00	3	12	....	..
6015	1.50	3	12	512	....

No. 0, 25 dozen in a box. Other Nos. 10 dozen in a box.

CASKET LOCKS.

Corbin.	Pr doz.	Size. Inch.	Keyed.	Eagle.	Gaylord.
371	$6.00	3½	12	371	....
373	6.00	3½	12	373	....
375	7.00	3½	12	375	....
377	7.00	3½	12	377	....
378	....	....	....	....	....
445	1.25	2 x 1¾	12	445	....

One dozen in a box.

CASH-BOX LOCKS.

Corbin.	Pr doz.	Size Inch.	Keyed.	Eagle.	Gaylord.
78	$3.50	2	12	78	....
380	2.25	2	12	380	....
382	4.75	2½	24	382	....
383	9.00	2½	24	383	...
384	4.75	2½	24	384	....
385	9.00	2½	24	385	....
386	5.00	2	24	386	....
387	5.50	2	24	387	..
388	6.00	2	24	388	....
389	6.50	2	24	389	....
486	4.00	2	24	486	....
487	4.50	2	24	487	....
488	5.00	2	24	488	....
489	5.50	2	24	489	...
600	6.00	2	24	600	....
601	6.50	2	24	601	....
602	7.00	2	24	602	....
603	7.50	2	24	603	....

One dozen in a box.

CHIFFONIER LOCKS.

Corbin.	Per dz.	Size. Inch.	Keyed.	Eagle.	Gaylord.
6076	$8.00	3½x1½	12	6076	....
6077	8.50	3½x1½	12	....	....
6078	9.00	3½x1½	12	....	....

One dozen in a box.

WRITING-DESK LOCKS.

Corbin.	Per dz.	Size. Inch.	Keyed.	Eagle.	Gaylord.
800	$1.00	1	12	....	74

One dozen in a box.

P. & F. CORBIN'S CABINET BLANKS AND KEYS.

No.	Per doz.	No.	Per doz.	No.	Per doz.
0	$0.20	138	$0.15	257	$0.32
2	.31	139	.15	258	.32
5	.20	141	.20	259	.32
9	.75	142	.20	261	.32
11	.25	143	.20	262	.32
17	.20	146	.50	263	.32
18	.20	146½	...	264	.32
23	.17	147	.38	265	.30
25	.20	148	.31	266	.30
26	.20	149	.75	267	.30
27	.20	150	.62	269	.25
31	.17	151	.50	271	.32
33	.15	154	.20	272	.32
34	.15	155	.20	273	.32
35	.15	157	.31	275	.25
36	.16	158	.31	276	.25
37	.20	159	.75	277	.25
39	.40	160	.25	290	.35
39½	.40	161	.25	291	.35
40	.17	162	.27	292	.35
42	.15	163	.15	293	.25
43	.15	164	.22	294	.25
44	.20	165	.22	296	.20
45	.15	166	.22	300	.30
46	.15	167	.20	301	.30
47	.22	168	.25	302	.25
48	.22	173	.44	303	.25
49	.22	174	.38	310	.30
50	.25	176	.22	311	.25
52	.22	177	.22	312	.25
55	.15	180	.25	313	.25
60	.20	181	.20	320	.30
64	.20	182	.25	330	.30
65	.20	185	.25	331	.30
66	.20	186	.25	332	.25
67	.20	187	.25	333	.25
68	.15	189	.25	340	.30
71	.15	198	.30	341	.30
72	.15	199	.30	342	.30
75	.20	202	.40	343	.30
78	.20	203	.40	350	.30
80	.20	218	0.75	362	.30
81	.20	219	.75	365	.30
83	.25	220	.25	368	.25
87	.20	0220	.32	369	.25
88	.20	0221	.32	370	.25
89	.17	0222	.32	371	...
91	.31	0224	.32	373	...
92	.31	0225	.32	374	.25
93	.27	0226	.32	375	...
95	.20	0228	.32	377	...
97	.20	0229	.32	380	.25
98	.20	237	.30	382	.25
103	.20	238	.30	383	.25
105	.20	240	.25	384	.25
113	.75	251	.38	385	.25
116	.20	252	.38	386	...
133	.20	253	.38	387	...
134	.20	255	.32	388	...
135	.15	256	.32	389	...

No.	Per doz.	No.	Per doz.	No.	Per doz.
391	$0.35	458	$0.32	1000	$0.30
392	.28	459	.32	1001	.30
393	.28	461	.32	1005	2.00
394	.35	462	.32	1005½	2.00
395	.28	464	.30	1006	2.00
396	.28	465	.30	1006½	2.00
400	.30	467	.30	1015	.30
401	.30	468	.30	1017	.30
402	.30	469	.25	1018	.30
403	.30	470	.25	1019	.30
404	.30	471	.25	6000	.50
405	.30	472	.25	6001 ⅞ in	.75
406	.30	473	.25	6001 1¼ in	.
407	.30	474	.25	6001 1⅜ in	..
408	.35	475	.25	6015	.20
409	.50	476	.25	6020 to 6043	.35
410	.35	477	.25		
411	.35	486	...		
413	.50	487	...	6056 to 6063	.30
414	.50	488	...		
415	.20	489	...		
416	.20	500	.25	6064	.50
417	0.20	508	.22	6065	.32
418	.20	509	.22	6067	.32
419	.22	510	.20	6068	..
420	.22	574	.50	6069	..
423	.17	575	.50	6070	..
425	.38	576	1.00	6071	..
426	.50	577	1.00	6072	..
427	.30	578	1.00	6073	..
428	.30	579	1.00	6074	..
431	.20	580	1.00	6074½	..
432	...	581	1.00	6076	2.00
438	.20	582	.60	6077	2.00
445	.20	583	.60	6078	2.00
452	.25	600	...	6080	.62
453	.25	601	...	6081	.62
454	.25	602	...	6086	..
455	.25	603	...	6087	..
456	.30	800	.15	6088	..
457	.30	810	.20	6089	..

			Per gross.
Cabinet Keys, assorted			$3.75
Cupboard Keys, assorted			3.75
Chest	"	"	3.75
Chest	"	Large	5.00
Till	"		3.25

BRITISH IRON MARKET.

[*Special Report by Cable to The Iron Age.*]

LONDON, August 24, 1881.

Scotch Pig.—There is no change to note in the condition of the market, the demand continuing light and prices weak. The quotations for Gartsherrie and Glengarnock have been lowered 6d. The following are to day's quotations:

Gartsherrie, alongside, Glasgow			54/
Coltness	"	"	56/
Glengarnock	"	Ardrossan	50/6
Eglinton	"	"	47/

Lighterage from Ardrossan to Glasgow is 2/ @ 2/6 per ton.

Bessemer Pig.—The demand continues large, and there is a tendency toward higher figures. Quotation to-day for lots equal portions Nos. 1, 2 and 3, is 57/6.

Manufactured Iron.—The market continues quiet and prices steady. Best Staffordshire Bars are £7. @ £7 10/.

Steel Rails.—The demand has been large during the week, and prices are firm. Ordinary sections are quoted £6 @ £6. 10/.

Iron Rails.—There is but little business doing. Prices are steady. We quote Welsh, £5. 5/ @ £5. 15/.

Old Rails.—The offerings are light and sales small. Old Tees are quoted £4. 7/6 to £4. 10/.

Scrap.—Business is small and prices steady. We quote Wrought £3. 15/.

IRON.

American Pig.—The transactions in raw Irons reported during the week have been unimportant, although the inquiry is said to be large. We quote: Foundry No. 1, $24.50 @ $25; Foundry No. 2 X, $22 @ $22.50; Gray Forge, $21.

Scotch Pig.—The demand for Foreign Iron since our last writing was chiefly of a retail nature, and no large transactions have come to our notice. The tone of the market is firm, and quotations, with the exception of Coltness, which has been advanced a trifle, are unchanged. We quote: Eglinton, $21; Carnbroe, $22.50; Coltness, $23.50 @ $24; Glengarnock, $22.50 @ $23, and Gartsherrie, $23 @ $23.50.

Rails.—No recent transactions either in Steel or Iron Rails are announced, although we hear of active inquiry, but, as a rule, for deliveries earlier than the mills can undertake to supply. We quote, nominally, Steel at mill, according to delivery, $55 @ $65, and Iron, $48 @ $49.

Old Rails.—Sales during the week amount to about 7000 tons Ts and D. H., at $27.50 @ $28 for the former, and $29.50 @ $30 for the latter, all spot lots. Double Heads to arrive are to-day quoted at $30.50, and Ts, $29. We also hear of sales in the West, on private terms, of about 10,000 tous Ts.

Scrap.—There is a fair demand for Scrap Iron, and about 1200 tons No. 1 Wrought, part from dock and balance from yard, was sold within a few days, at $28 @ $30. We quote No. 1 Wrought, $28, ex ship, and prime selected, from yard, $30.

METALS.

Copper.—Sales during the week have been insignificant in extent, but the market has remained firm at 16¾¢, while Baltimore may be quoted 16¼¢ @ 16¾¢. No change is reported per cable from London. The latest advices by mail are as follows, under date of August 13: "This market remains very steady in prices, and the demand shows little alteration, with the exception of the Chili charters just announced for the first half of this month as 1500 tons. Being under the average quantity, there is nothing fresh to have to record. Buyers are still very reluctant to enter largely into fresh engagements, while sellers, for their part, are mostly firm in their quotations, and are able to sustain the market with greater ease than they otherwise would be able to do on account of the few last statistics showing a diminution in the total visible stocks, at times only slight, but yet sufficient to prove that there is not so great a desire to over-supply the market as existed some time back." Manufactures are quoted as under: Pit and Hot rolled Flat Bottoms, 27¢ per pound; Cold-rolled Flat Bottoms and Pit Bottoms, with flange cut, 28¢; Braziers, 26¢ @ 32¢, as to size and weight; Circles, 29¢ @ 32¢; Sheets, 26¢ @ 29¢; Sheathing, 24¢, and Bolt Copper, 26¢.

Tin.—Although no wholesale lots have been sold during the week, the jobbing demand has been fair, with a good prospect of becoming still more so in September. Meanwhile our market has not materially changed. Singapore cables $29 per picul, the parity of which is 21½¢ here. At Batavia 13,000 piculs Billiton were sold at auction on Aug. 23 at an average of 61.90 guilders per picul, the parity of which at New York is 21¼¢. It is believed that this Tin will all go to Holland, where a good consumptive demand has lately sprung up. London cables £92 for Straits Tin, while we quote here, large lines, Straits, 21¼¢; Australian, 21¼¢, and Billiton, 21¢. According to Messrs. Gilfillan, Wood & Co., Singapore, the shipments from the Straits settlements to the United States have been during the first six months:

	Piculs.		Piculs
1881	34,239	1878	35,328
1880	71,740	1877	29,818
1879	48,641	1876	21,593

Tin Plates.—There is a stronger market here on the spot, Coke being quite scarce, but the demand is not very active. In England it is claimed that the demand is sufficiently large to absorb the current output. We quote toward the close at New York, large lots, ordinary brands, per box: Charcoal Bright, $5.87½ @ $6.25; ditto Ternes, $5.35 @ $5.45; Coke Tin, $5.10 @ $5.15, and ditto Ternes, $5.

Lead.—Considerable strength still manifests itself, 600 tons selling at 4⅞¢ @ 4.90¢; the quotation at the close is $4.95 @ $5. From St. Louis a firm state of affairs is also reported, Lead being offered there at 4⅞¢, and for soft Missouri corroding 4⅞¢ is bid. Nothing has transpired at New York in Refined Lead; it is held with great firmness at $5.15 @ $5.25. Manufactures are quoted as follows: Sheet Lead, 7½¢; Lead Pipe, 7¢; Tin-lined ditto, 15¢; Block Tin ditto, 35¢; Drop Shot, 7¢.

Spelter and Zinc.—But a light trade is transacting in Common Domestic Spelter on the basis of 5 1-16¢. Silesian remains inactive. *Sheet Zinc* may be quoted 7¢. *Antimony.*—Of Cookson's brand, 4 casks sold at 14¾¢. Stocks have run to a low ebb and cannot be readily replaced.

COAL.

A week hence the coal operators will probably decide upon their September prices to open the season, as it were, but no change has taken place during the week under review, either in regard to prices or the policy of restriction. The latter point, in fact, has passed out of mind, as the companies deny that there is any accumulation at the present rate of production, at least no more than results from the inability of vessels to take the coal away from the several shipping points. The general impression is that there will be no advance in prices; an advance is possible, but hardly probable. In hard coals there is a good fair business doing. Local trade is dull, but the Eastern demand is good, restricted only by the scarcity of vessels. Within the past ten days there has been quite a fleet available for coal transportation, but vessels are now getting worked off. Shipments, however, are still behind. To Boston the rate is $1.40 @ $1.50; to Providene, $1. Anthracite is quoted as heretofore, viz.: Lehigh, $5 @ $5.25 for Lump; $4.25 @ $4.45 for Grate, Egg and Stove; Chestnut, $3.90 @ $4. The free-burning Coals are about $3.90 for Lump and Grate; these prices shaded for other descriptions. The Bituminous trade continues dull, but confidence is felt that the fall trade will open actively. Dealers quote as follows: At Georgetown, f. o. b., $3.10 @ $3.25; at Baltimore, $3.25 @ $3.40.

The total tonnage of Anthracite Coal from all the regions for the week ending August 13, amounted to 635,914 tons, against 417,564 tons in the corresponding week last year. The total amount of Anthracite mined for the year is 16,276,693 tons, against 12,829,946 tons for the same period last year. The quantity of Bituminous Coal sent to market for the week amounted to 91,160 tons, against 83,954 tons in corresponding week last year.

FOREIGN TRADE MOVEMENTS.

The following is a summary of the foreign trade movements for the week ended August 20:

IMPORTS

For the week:

	1879.	1880.	1881.
Total	$7,427,788	$9,082,752	$8,723,797
Prev. reported.	189,266,978	311,371,896	267,447,144
Since Jan. 1	$196,694,766	$320,454,648	$276,170,941

Included in the imports of general merchandise for the week were articles valued as follows:

	Quantity.	Value.
Brass goods	29	51,146
Bronzes	22	2,437
Chains and anchors	28	1,054
Clocks	15	2,469
Copper	..	3,012
Cutlery	139	40,721
Pins	6	856
Gas fixtures	6	520
Guns	109	18,529
Hardware	33	4,818
Iron, pig, tons	8,056	150,254
Iron, sheet, tons	125	7,657
Railroad bars	12,668	110,090
Iron cotton ties	2,200	1,985
Iron ore, tons	4,520	13,546
Iron, other, tons	3,166	85,218
Lead, pigs	830	3,584
Machinery	109	9,883
Metal goods	359	21,904
Needles	34	8,684
Nickel	19	7,076
Old metal	..	45
Platina	2	5,845
Platedware	6	250
Saddlery	7	1,125
Steel	16,320	103,978
Silverware	9	1,263
Tin, boxes	36,730	159,671
Tin, 1,883 slabs	158,332	35,107
Wire	485	2,196
Nails	5	1,003

The following are the imports of leading articles, compared with previous dates:

	For the week.	33 weeks of 1881.	Same time 1880.
Cutlery, pkgs.....	139	4,508	5,726
Hardware, pkgs..	33	701	905
Iron, R. R., bars..	12,668	256,024	384,898
Lead, pigs.....	830	26,351	40,982
Steel, pkgs.....	16,320	656,129	470,004
Tin, boxes...	36,730	1,018,708	965,878
Tin slabs, lbs.....	158,332	9,946,752	10,317,931

EXPORTS OF SPECIE.

For the week ended August 20 :

Total.....	$170,196
Previously reported.....	7,103,758
Total since January 1, 1881.....	$7,273,954
Same time in 1880.....	5,191,271
Same time in 1879.....	11,898,101
Same time in 1878.....	10,112,097
Same time in 1877.....	21,047,521
Same time in 1876.....	30,930,322
Same time in 1875.....	63,677,255
Same time in 1874.....	40,244,727
Same time in 1873	39,244,658
Same time in 1872	56,164,631

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending August 23, 1881 :

Hardware.

Alexander F. & Sons, Packages, 4; Pans, 4; Saws, 2; Stores, 9
Boker Hermann & Co. Cases, 77; Chains, &c., cks., 17
Brown Wm. Box, 1
Bryce Wm. & Co. Mach'y, cases, 3
Burkinshaw W. C. Cutlery, cs., 5
Ceroxyton Co. Mach'y, cs., 3; Mach'y, pieces, 11
Davies & Co. Cases, 6
Degrauw, Aymar & Co. Chains, 12; Chains, cks., 6; Chains, lengths, 6
Downing, Sheldon & Co. Casks, 3; Case, 1
Duval H. R. Pipe & tubes, cs., 3
Drexel, Morgan & Co. Arms, cs., 44
Field Alfred & Co. Cases, 14; Anvils, 51; Chains, cask, 1; Casks, 3; Wire, bdls., 2
Folsom H. & D. Arms, cs., 21
Godfrey C. J. & Co. Guns, cs., 2
Graef Cutlery Co. Cases, 5
Hartley & Graham, Guns, cs., 23
Hensel, Bruckmann & Co. Mach'y, cases, 8
Herbst Bros. Mach'y, cs., 15
Howard Bros. & Read, Cases, 3; Wire, cks., 4
Kamak Cutlery Co. Case, 1
Latham & Jeffries, Cases, 5; Cask 1
Lalance & Grosjean, Cases, 2
Marshall James, Sash chains, cask, 1
Merchants' Disp. Co. Arms, cs., 30
Osterman W. Ironware, case, 1
Pesant J. A. Wheel, 1; Engine, 1
Ranft R. Wire, cask, 1
Rosenthal J. & Co. Cases, 3
Rubber Comb Co. Mach'y, case, 1
Schoverling, Daly & Gales, Cases, 10
Schaffelin W. H. & Co. Cases, 2
Strasburger Oscar & Co. Casks, 5; Cases, 2
Taylor Thomas, Case, 1
Tryon E. K., Jr., & Co. Arms, cs., 17
Winchester Rep. Arms Co. Cases, 2
Wiebusch & Hilger Co. Packages, 21; Cases, 9
Witte John G. & Bro. Cases, 7
Order, Guns, cs., 20; Cases, 10; Casks, 5

Iron.

Anglo-Am. Roofing Co. Iron roofing, cs., 96
Baring Bros & Co. Ore, tons, 1573; Pig, tons, 204; Bundles, 525; Wire rods, coils, 198
Brown Bros. & Co. Bars, 3637; Nail rods, bdls., 4387
Crocker Bros. Pig, tons, 3463
Downing, Sheldon &Co. Wire, cask, 1
Drexel, Morgan & Co. Sheet iron, bdls., 760; Ore, tons, 458
Elliott Sons & Co. Ore, tons, 1149
Hernsheim L. Pig iron, kilos., 355,668
Lang, W. Bailey, Bars, 30
Lee James & Co. Pig iron, tons, 400
Lilienberg N. Rolled iron, bars, 2623; Bars, 1050
Lundberg G. Bdls, 48; Bars, 4165
Mill H. R. de, Sheet iron, bdls., 250
Milliken & Smith, Wire rods, bdls., 417; Wire, bdls., 836
McComb J. J. Cotton ties, bdls., 5000
Parker, A. B. Wire rods, lots, 344
Perkins & Choate, Spiegelsen, tons, 150; Cast iron, lot
Tillotson L. G. Wire, lots, 580
Wells, Fargo & Co. Bundles, iron, 40
Williamson, Jas. & Co. Pig, tons, 400
Order, Ore, tons, 2030; Pig, tons, 1677; Pig, kilos., 253,165; Scrap, tons, 407; Spiegel, kilos, 653,757; Spiegel, tons, 1654; Spiegel, lot; Bars, 7829; Bars, tons, 35; Rails, 1661; Coiled rods, bdls., 148; Blooms, 2069; Wire rods, bdls., 5234; Cotton ties, bdls., 10,000; Oxide of iron, cks., 55; Old flange rails, tons, 300

Steel

Baring Bros. & Co. Rail ends, tons, 381
Bank of Montreal, Tin, slabs, 494
Brown Bros. & Co. Steel wire, rings, 218; Wire, coils, 494
Brown Wm. Bundles, 102; Case, 1; Bars, 14
Behm, Meyer & Co. Tin, slabs, 918
Canadian Bank of Commerce, Tin, slabs, 693
Crowell & Co. Bars, 61; Bundles, 47; Cases, 2
Davies & Co. Bars, case, 1
Drexel, Morgan & Co. Blooms, 5101; Bessemer rail crop ends, tons, 300
Hammacher & Co. Wire, cks., 3
Lilienberg Engineer, Bess. blooms, pcs., 24
Moss F. W. Files, cks., 2; Bundles, 80; Bars, 26
Sanders Bros. Blooms, 868
Saxton & Son, Cases, 4
Third National Bank, Rails, 732
Woodford W. O. Bundles, 175; Bars, 62; Cases, 20
Order, Blooms, 1028; Old steel, cwt., 191; Strips, casks, 15; Bands, 461; Bundles, 21; Cases, 13; Spring steel, tons, 73; Forgings, 12; Bars, 3

Metals.

Agostini J. Old copper, cs., 2
Alexandre F. & Sons, Ores, bags, 50; Tin plates, bxs., 20; Shot, bbls., 32
Am. Brass Clock Co. Effects, pkgs., 5
Aspenwall T. & Son, Packages, 6; Casks, 9
Bank British N. America, Tin, slabs, 1137
Bank of Montreal, Tin, slabs, 571
Cort W, L. & Co. Tin plates bxs. 115
Dickerson, Van Dusen & Co. Antimony, cks., 17; Tin plates, bxs., 314
Meyer G. A. & E. Oxide zinc, bbls., 272; Oxidie zinc, cs., 60
Shepard, Sidney & Co. Tin plates, bxs., 500
Phelps, Dodge & Co. Tin plts., bxs., 17,333; Black taggers, bxs., 207
Wason C. & Co. Nickel, cs., 11
Wright Peter & Co. Zinc, cs., 12
Order, Tin plts., bxs., 30,808; Tin, slabs, 1805; Tinfoil, cs., 3; Spelter, ingots, 1459; Tin sheets, cs, 50; Antimony, cks., 78; Tin, ingots, 600

OLD METALS, PAPER STOCK, &c.

The purchasing prices offered by dealers are as follows :

Copper, heavy.....	₩ lb.	$0.14	@ $0.15
Copper Bottoms....	"	.12	@ .13
Yellow Metal.....	"	.08½	@ .09
Brass, heavy.....	"	.11	@ .11½
Brass, light.....	"	.08	@ .08½
Composition, heavy.....	"	.12	@ .13
Lead, heavy.....	"	....	@ .04
Tea Lead	"	.03½	@ .03¾
Zinc.....	"	.03	@ .03¼
Pewter, No. 1.....	"	.13	@ .13½
Pewter, No 2..	"	.08	@ .09
Wrought Iron.....	₩ ton	23.00	@ 24.00
Light do.....	"	11.00	@ .....
Stove Plate.....	"	12.00	@ .....
Machinery do.....	"	15.00	@ 15.50
Grate Bars.....	"	5.00	@ 6.00

The prices current (prices paid by local dealers) for Rags, &c., are as follows :

Canvas, Linen.....	₩ lb.	3½c.	@ 4 c.
White Cotton, New.....	"	3½c.	@ .....
" " No. 2.....	"	2½c.	@ .....
White, No. 1.....	"	4¼c.	@ 4½c.
" No. 2.	"	2¾c.	@ 2⅞c.
Seconds.....	"	1 c.	@ 1¼c.
Soft Woolens.....	"	9½c.	@ 10¼c
Mixed Rags	"	2c.	@ 2½c.
Gunny Bagging	"	1¾c.	@ ....
Jute Butts.....	"	2c.	@ 2½c.
Kentucky Bagging.....	"	4¼c.	@ 4¾c.
Rook Stock.....	"	2½c.	@ 2¾c.
Newspapers.....	"	1¼c.	@ 1⅝c.
Waste Paper and Scraps.....	"	½c.	@ ¾c.
Kentucky Bale Rope.....	"	4c.	@ ....

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Aug. 23, 1881.

Pig Iron.—The market is firm, although the amount of business done has not been large. The depletion of stocks, as well as the large amount entered for forward delivery, has strengthened the views of furnacemen considerably, and there is very little Iron of any kind to be had on terms quoted a week ago. The demand is not specially urgent, however, the recent heavy transactions having supplied the wants of leading consumers, although there is no denying the fact that good brands are scarce and command a somewhat higher premium almost weekly. This condition of the market has to some extent influenced other grades, and is becoming more marked as the demand reaches them. Looking solely at the American market, it is difficult to see how higher prices can be avoided. There is undoubtedly a scarcity, and with such an enormous consumption as there is at present it is difficult to see how the supply can be increased without the stimulus of better prices. This, in view of the condition of foreign markets, will be a dangerous experiment. Higher prices will involve a considerable increase in cost of production. Labor and material, already at high-water mark, will be unfavorably affected and claim a share of the advance, and probably force a still further one, by which time Foreign Iron will be rushed into the market on account of its cheapness. It is difficult to see how an advance can be avoided, and almost equally so to avoid the outside competition. The position is critical and predictions, at a time like the present, entirely out of the question. Sales have been made at $24.50 @ $25 for No. 1 Foundry ; several brands command $25.50 @ $26, and all qualities are scarce. No. 2 sells at $22 @ $22.50, and is in fair demand. Gray Forge is very scarce ; favorite brands are out of the market, except to regular customers, and even they have to go on short allowance. A few ordinary brands may be had in limited quantities at about $20.50, others at $21 @ $21.50, and the best at $22. Large lots would be hard to secure at any price, some of the leading concerns having withdrawn from the market until they have reduced their engagements, which are already far heavier than usual.

Foreign Iron.—The market is unsettled and feverish, and very little business has been done during the past week. There is no general demand for Middlesboro' Iron, except when it can be had at low-down rates. No. 4 at $17.50 and No. 3 at $18 @ $18.50 could probably be worked off, but the only buyers are parties who take large lots, and they expect to make their own terms. Importers appear unwilling to work up a trade among the smaller class of buyers, so that when Iron is actually on the spot the class of buyers referred to have it pretty much their own way. Stocks in store are nearly exhausted, and it remains to be seen what offers they will make on lots for shipment, as for certain purposes it is probably still cheaper than American Iron. Small lots of No. 3 are taken at about $19 from store. Scotch Iron is nominal at $21 @ $24, but there is scarcely anything doing upon which to base quotations. Bessemer Iron is still in demand, and some large sales have been made since date of your last report. Probably 20,000 have been closed at a fraction under $25 for 1881 shipments, and about as much over $25 for the spring of 1882. Prices are easy for prompt shipments, and for such $24.50 @ $24.75 appear to be the ruling rates, and $25 @ $25.25 for spring of 1882.

Blooms—Are higher and held at the following prices : Charcoal Blooms, $72.50 ; Run-out Anthracite, $60 @ $62.50, and about $52.50 for Scrap Blooms.

Muck Bars—Are in active demand and not obtainable at $40 ; probably $41 could be realized if they were offered for sale. We hear later of sales at $41, in lots of 200 to 500 tons each. Market bare.

Bar Iron.—This department of the Iron trade maintains all its recent activity, and gives fair promise of retaining it to the close of the year. Orders are abundant, much larger in fact, and more numerous than can be easily handled, but the mills are getting under way for the fall trade, and are likely to increase their output 25 to 35 % during the next two months, as compared with the output since the 1st of last month. Otherwise there would be an extraordinary scarcity of Iron. The feverish condition of the market during the past 30 days was no doubt due largely to temporary scarcity and fears that this would increase later on. This feeling seems to have been pretty well dissipated during the week, and business is settling down into its usual routine character. There is a good deal of inquiry for large lots of Iron yet, which no one cares to name a price for. The danger is rather that when Iron can be obtained there will be less outcry for it. In other words, a good deal of the demand lately has been speculative or cautionary, and as soon as it is found that prices are not going higher, and there will be no scarcity of Iron, buyers will be far less urgent for prompt delivery. There are some, however, who retain the idea of a "boom" to come along quite unexpectedly, and it must be conceded that the immense consumption and comparatively light stocks are favorable conditions, especially in view of the fact that the entire trade is in a feverish and excitable condition, and a sudden and general impulse to buy would send prices up like a rocket. Manufacturers, however, are following a conservative course, each selling about 30 to 45 days' work, and, beyond that, refusing to make quotations. This leaves it open to any one really in need of large supplies and who cannot wait to import on best terms they can. The fact that manufacturers refuse to name a price leaves nothing on which to figure a profit on imports, so that the chances are that parties will wait rather than take risks on bringing in foreign iron. Several good-sized orders have been taken during the week at 2.5¢, and others are on the market to be placed at first opportunity. It is somewhat remarkable that the changing of quotations to 2.5¢, noted last week, is the first that has been made officially since August, 1880. Considering the large business done since then, the uniformity of quotations is remarkable. Sales were made at slightly lower prices at times, but there was nothing to warrant an official change during the entire 12 months. It is hoped that the present quotation will be equally well maintained. The immediate danger probably will be in an attempt to force prices still higher, which is not likely to be accomplished without danger to the entire trade.

Structural Iron.—It is hardly necessary to say anything in regard to Shaped Iron beyond the fact that the mills are crowded with work, and orders still waiting acceptance at 2.7¢ for Angles, 3.3¢ for Beams, 3.4¢ for Channels, and 3.5¢ for Tees.

Plate and Tank Iron.—There is less urgency in the demand, although orders if sought for could be had in abundance. Prices are higher, however, and for the most desirable orders the following are inside rates, say : 3.25¢ for Tank Iron, 3.75¢ for Refined, 4¢ for Shell, 5¢ @ 5½¢ for Flange, and 6¢ @ 6½¢ for Fire-box.

Steel Rails.—The demand is very active, but sellers are inclined to complete some of their old contracts before entering into new engagements. Buyers are very urgent and would probably meet sellers' views as to prices if by so doing orders could be placed. Manufacturers claim that they are already nearly two-thirds full for a year to come and wish to keep the balance open for contingencies. Even if prices are no higher accidents may occur, and it is only prudent to leave some margin to work on. To regular customers probably $57 @ $60 would be named, according to delivery, but to outside buyers no quotations are given. The demand for foreign Rails is also very heavy, but January shipments are about as early as can be obtained. Prices are firmer and $62.50 @ $65 for light sections is quoted delivered at New Orleans or Galveston.

Steel Blooms.—There is very active demand, and contracts for several good-sized lots will probably be made in the course of a few days. During last week a number of small lots were taken at prices equal to $43 @ $44.50, duty paid. German Blooms are still obtainable at £6. 2/6, c.i.f., but English are dearer and held at £6. 7/6 @ £6. 10/.

Iron Rails.—There is more inquiry, and sales could be made without difficulty if prompt deliveries could be obtained. Small lots are taken at about $47.50 for heavy sections, up to $53 for 16s. Large orders are in the market, but it is understood that November deliveries are the earliest that can be guaranteed, hence buyers are disposed to wait, in the hope that prices will be more in their favor when manufacturers are looking for work. English Rails appear to be out of the market, and no quotations can be given this week ; latest sales reported were at $46, ex store, New York.

Railway Fastenings.—The demand is very large, and inquiries for several hundred tons are in from two or three different parties. Heavy sales have been made at last week's prices, viz. : Spikes, 2.75¢ ; Fish Plates, 2.3¢ @ 2.4¢, and Bolts and Nuts, 3.25¢ @ 3.75¢. Market firm and prices tending upward.

Old Rails.—The market is very unsettled, and it is hard to say what turn it will take. Late last week prices were rather weak, and cash offers of $27.25 and $29.50 would have bought one or two lots Flanges and Doubles. To-day the inquiries are more from buyers than sellers, and it looks as though another change was at hand. It is impossible to judge what the upshot will be. When sellers withdraw buyers become anxious, and at the first offer to sell buyers become frightened. This has been the condition of the market for months past, and it is impossible to define what the condition of the market is in the absence of actual sales. Nominally, Flanges are $27.50 @ $28 ; Doubles, $29.50 @ $30. Several thousand tons were sold on Tuesday at 80/ c. i. f. Market steady at that quotation.

Scrap Iron.—Prices are firmer again, and $29 @ $31 may be quoted for Wrought, and $20 @ $21 for Cast.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., Aug. 23, 1881.

Pig Iron.—There has been nothing particularly important developed during the past week. While possibly the market is not so excited as it was a couple of weeks ago, there is no abatement in the demand and prices are strong, although unchanged. In addition to sales of some 5000 tons reported, there were several sales consummated which, for reasons known to the parties interested, were not made public. There is a continued good consumptive demand, both for present and future delivery, and some of the furnaces are pretty well sold up for the rest of the year. While some furnacemen are refusing to sell at current rates, others have been, and are still, meeting the market, and the general opinion is that to run prices up much higher might lead to bad results by stimulating foreign competition, which it is desired to guard against. Furnacemen have not forgotten the boom of two years ago, nor its effects, and while anxious to secure better prices than those now ruling, they will take care not to let English and Scotch Iron get in the ascendancy again. It is worthy of notice that the receipts of Eastern Iron have been comparatively light for some weeks past, which is owing to the fact that Eastern furnacemen can do better at home than here. Forge Irons may be quoted at $22 @ $22.50, 4 mos., from native ore, and $23 @ $23.50 from lake ores. Foundry grades, $23 @ $23.50, 4 mos., for No. 2, and $24.50 @ $25 for No. 1. Sales of Cold-blast Charcoal at $35.50 @ $36, cash.

Bessemer—Is firmer, with an increasing inquiry, and an advance of 50¢ to $1 per ton is being asked for future delivery—may be quoted at $27 @ $27.50, 4 mos., for present and $28 @ $28.50 for future delivery. The best brands of English Bessemer can not now be laid down here from the seaboard much, if any, under $28. The increased demand for Bessemer will have a tendency to reduce the production of mill and foundry, as furnaces that have been working on the latter have taken contracts for the former. As the Steel Rail mills are all full of orders, many of them sold well into next year, a large consumption of Bessemer for some time to come is assured.

Manufactured Iron.—There is but little change to note in the situation ; activity is still the order of the day, the mills being so pressed with business that they have great difficulty in meeting their contracts. As stated in our last report, the inquiry is chiefly for early deliveries, while the mills are sold ahead from 60 to 90 days, and are unable to book additional orders except for delivery beyond the time indicated. The lock out at Cincinnati and other points West has, as might be expected, increased the business of Pittsburgh. Merchant Bars are still quoted at 2.40¢ @ 2.50¢ rates ; No. 24 Sheet, 4.20¢ ; Tank, 3.40¢ @ 3.50¢ ; Skelp, 2.60¢ @ 2.75¢ for grooved, according to size ; Hoop, 2.80¢ @ 3¢, as to size ; Boiler Plate, 6¢ @ 6¼¢.

Nails.—Prices remain as last quoted : $3, 60 days, 2 % off for cash, with an abatement of 10¢ on carload lots and upward. The demand has not opened up very lively as yet, and there is a feeling of disappointment in consequence, but manufacturers still entertain hopes of a good fall trade.

Wrought Iron Pipe.—The situation remains unchanged ; business active, mills are all very busy, and a further advance soon in prices is not improbable. It is worthy of mention that Skelp or Pipe Iron has gone up materially, and, this being the case, Pipe will be very likely to follow. Meantime, we quote discounts at 62½ @ 65 % on Gas and Steam and 40 % on Boiler Tubes, Oil-well Casing, 75¢ net, and Tubing, 22¢. Notwithstanding the unremunerative prices at which oil has to be sold, there are a good many new wells going down and there is considerable activity in oil-well supplies—more than generally supposed.

Muck Bar.—There is a steady demand, with but little offering, as the mills elsewhere, as here, are consuming all they can make—some of them more. This accounts for the limited offerings, and that of a desirable quality sells readily at full prices, say $40, cash, to $41, 4 mos., showing an advance of $1.50 @ $2 per ton as compared with the lowest point. The reason of it having advanced more than Pig Iron was in consequence of it being in such scant supply, with a more urgent demand.

Rails, &c.—A great many orders for early delivery have to be declined, as the mills are oversold ; in the absence of sales we omit quotations, but the market is firmer. Railway Spikes are still quoted at 3¢, 30 days, although some of the brokers are still able to buy at 2.85¢. Splice Bars are quoted at 2.40¢ @ 2.50¢, and Muck Bolts at 3.40¢ @ 3.60¢, cash, at mill.

Steel.—There is an increasing demand for all kinds of merchant Steel ; mills are busy, some of them are pressed for certain kinds, Boiler Plate in particular, the consumption of which is steadily increasing, and prices are firmer, but unchanged. Manufacturers, if so disposed, could establish an advance, but it took them so long to get control of the home markets that they are determined to keep foreign Steel out of the American markets if possible. Best brands of Refined Cast Steel, 11¢ ; do. Crucible Machinery, 7¢ ; Boiler Plate, 6½¢ @ 7¢ ; Bessemer and Open-hearth Machinery, 5¢ @ 5½¢ ; do. Spring, 4¢ @ 4½¢ ; do. Plow, 4¼¢ @ 4½¢.

Scrap.—There is a fair and increasing business, but no change in prices. Wrought is still quotable at $27 @ $28 per net ton for Ordinary and $29 @ $30 for Selected Railroad. Old Car Wheels continue dull. We quote at $28 @ $30 per gross ton. As noted in a recent report, Bessemer Iron has, to a considerable extent, taken the place of Car Wheels, as, in addition to answering the purpose, it is cheaper.

Window Glass.—Discounts remain unchanged as follows : Carload lots, 60 and 20 % on Single, and 70 % on Double Strength. Business continues rather quiet ; there is an increasing inquiry, and traveling salesmen are getting ready to make their fall trips ; some have started already. The feeling obtains that there will be an active fall trade, and, in view of the adoption of the sliding scale between manufacturers and skilled workmen, no further trouble as regards the labor question is apprehended. The present arrangement appears to be satisfactory to both parties, being just and equitable ; when prices go up both get the advantage, and with a decline it is equally divided between the employers and employees.

Coke.—The production is still estimated in round numbers at 45,000 tons per week, yet with a steady demand there is no accumulation, and prices are steady at $1.60 per ton, free on cars at ovens ; $1.70 @ $1.75 for small foundry orders. The development of this important interest within the past 10 or 15 years has been wonderful. Shipments are now being made to all parts of the country.

Coal.—This important interest continues quiet, owing to the continued suspension of navigation ; railroad operators, by which we mean those who move their produce by rail, are very busy, and there is a large quantity loaded in boats and barges ready to move as soon as there is water. Stocks in some of the down-river markets are pretty well reduced, and prices have gone up in consequence.

CHICAGO.

Office of *The Iron Age*, 36 and 38 Clark Street, cor. Lake Street, CHICAGO, August 22, 1881.

Pig Iron.—The market is, as previously reported, firm, and prices continue unchanged ; purchasers are buying freely. We quote Lake Superior Charcoal Nos. 1 and 2, $29.50 @ $31.50 ; No. 3, $32 ; Nos. 4, 5 and 6, $34 @ $35 ; Thomas from $25.50 @ $28.50. Crane X, $27 ; X X, $25. American Scotch, $25 @ $27 ; Silvery Soft, $23 @ $25 ; Scotch imported, $27 @ $28.

Manufactured Iron.—The market remains unchanged, and prices firm at the following quotations : Bar, $2.70, and $2.60 at mill ; Plate and Tank at $3.50 ; Angle at $3.20 ; T at $3.50 rates ; Hoop, $3.20 @ $3.30.

Nails.—Nails are selling fairly at the advanced rate, $3.15 for 10d to 60d, with the usual discounts off for cash ; quotations at mill in carload lots, $3.05.

Steel.—We have no change to report in the market for Steel ; the prices are firm and inquiry good. We quote : Tool, 11½¢ ; Machinery, O. H., 5½¢ ; Crucible Machinery, 7¢ ; Hammer, 2 inches and under, 8¢ ; over 2 inches, 9¢ ; Cast Spring, 6½¢ ; and O. H. Spring, Tire and Sleigh Shoe, 5¢. The quotations on this latter class of Steel would be shaded a trifle on large lots. Sheet, first second and third quality, 12¢, 10½¢ and 8½¢, respectively ; Crucible Plow, 6¢ @ 6½¢ ; Eagle Plow, 5½¢ ; Iron Center Plow, 10¼¢ ; and soft Steel Center Plow, 10¾¢.

Scrap Iron.—A somewhat better feeling continues to prevail in this market, and prices remain unchanged since our last quotations. We quote : No. 1 Forge Scrap, $30 ; No. 1 Wrought, $24 ; Heavy Cast, $20 and Stove Plate $13.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., CHATTANOOGA, August 22, 1881.

The weather has been more comfortable than for any week of the month. It has not been cool at noon, but the nights have. The week ends with thunder showers, which show indications of becoming general throughout the district. Dealers continue to report business brisk in heavy articles and prices strong, outside figures ruling in most transactions. The latest and most reliable reports from the cotton districts indicate that the cry of short crops was fully half pure croak. The crop will probably be about equal to last year in number of bales, and secured in much better condition. The fact that few failures occur in cotton regions is proof that last year's disasters from water, and this year's injury from drouth, have both been overdone by interested speculators and sensational reporters.

Pig Iron.—There is nothing new. The movement goes on as it has. Much attention is being directed toward the increase in production of higher grades by their extreme scarcity for several months past. We quote : No. 1 Foundry, $22 @ $23 ; No. 2 Foundry, $20 @ $21 ; Gray Forge, $18 @ $19 ; White and Mottled, $16 @ $18 ; Car-wheel Metal, $38 @ $40.

Ores.—We quote : 50 % Brown Hematite, per ton, $2 @ $2.75 ; Red Fossil, $2 @ $2.25.

Miscellaneous Articles.—Old Rails continue rather a drug in the market, though the strong tone of Pig Iron tends to maintain quotations. We quote them at $26 @ $28 ; Wrought Scrap, $20 @ $25 ; Cast Scrap, $10 @ $15 ; Old Wheels, $28 @ $30. Scraps are dull and little sought.

Nails—Are improving. The largest lots command $3 rates, and the mill here—the largest in the South—is several weeks behind its orders. We continue to quote job lots at $3.10 rates.

Manufactured Iron.—Bar continues to enjoy a satisfactory business at $2.50 rates. Railway Supplies are strong at quotations and some articles scarce, owing to the sharp demand. We continue to quote : Spikes, $3.15 ; Track Bolts, $4 ; Trestle Bolts, $4.50 ; Fish Plate, $2.50. There is a good prospect of a small advance in this entire list.

Coal.—We quote run of mine to manufacturers at $2 net ton at mills. Householders are keeping out of market, hoping for a decline in Lump—a thing not likely to occur.

Coke.—We quote : Furnace Coke, $3 per ton at furnace ; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails.—Steel Bars, $6 @ $64 at mill ; Iron, $50 @ $52 ; Small, $57 @ $60.

BOSTON.

AUGUST 20.—After so long a period during which low prices have ruled, the movement in Iron of the past week causes much activity in the trade and some anticipation of a sudden rush in all branches of the business ; but the views of the more thoughtful and experienced dealers do not take this shape. The facts, so far as we can gather them, are that Iron-consuming industries are active, with light stocks in the hands of machinists and manufacturing foundrymen. The stocks of low-grade Iron are ample, but the best brands of all kinds are in short supply. The same is true at foreign shipping ports, where stocks of first-class Iron are light and prices firm. In Pig Iron the actual advance would be fairly stated in general terms at about 50¢ per ton, though nominally remaining about the same with the exception of one or two choice brands ; but in some classes of finished Iron there is a decided advance, with the feeling that a still farther stiffening is to come ; dealers, however, although carrying very light stocks are not desirous of "stocking up" for a rise even if the mills were able to fill orders promptly. Manufactured Iron has ruled for some time lower than it should even in relation to the low price of the crude metal, and it is judged to be sound policy to give the mills a chance to meet the sudden rush without forcing prices up to the importation point. What is to be desired is to encourage steady business at paying prices. Nobody, therefore, is tempted by the present move to speculative action, and to handle Iron, with the exception of an enormous advance, would almost certainly result in burned fingers ; but with careful management and level heads the prospect was never better for a firm, steady and continuous business in Iron at remunerative rates and the least possible uncertainty and risk. A sudden check of railroad extension from any cause would result in disaster to the Iron interest if it were found too much sail spread. *American Pig* is very firm. We quote prices at shipping

ports: $24.50 @ $25 for No. 1 X; $22 @ $23 for No. 2 X, and $21 @ $21.50 for Gray Forge. Small spot lots command $2 @ $3 per ton above these quotations. *Foreign Pig* is in very active demand with very light offering and firm. We quote: Eglinton at $21 @ $21.50; Langloan, $24.50 @ $25; Gartsherrie, $22 @ $23; Glengarnock, $22.50 @ $23.50; Carnbroe, $22 @ $23. *Old Rails* are very scarce and quoted at $32 for American and $30 for Foreign, if they fill orders promptly. Buyers are more anxious at present prices than they were a week ago at the rates then current. No quotations are made for futures, and prices given must be promptly accepted or considered off. *Manufactured Iron.*—In this class of goods there is much excitement, and even confusion, as to present and prospective values. There is however, no doubt that prices will rule, even stronger and higher than at present. There are important sizes and shapes, for which any prices quoted are merely nominal, as there are none to be procured at an offering. The extension of railroad building and increase of rolling stock has much to do with the eager demand, but all forms of manufacturing and agricultural enterprises are making heavy demands upon the material which enters so largely into all constructive industry. We hear of a large order for car axles which cannot be filled at any specific time or price. The enlargement of existing mills and the erection of new ones is already talked of, but whether it will take practical form depends. *Bar Iron.*—The advance of last week has not only been sustained but still further upward movement has taken place. The mills are everywhere cramped with the pressure upon their facilities. Stocks are very much broken, and sizes, which are desirable and necessary, are frequently not to be had at any price. Dealers say that they could make their own terms. We quote: Refined, $2.40 @ $2.50 for large lots; Horse Shoes, $4.25 @ $4.33; Swedish and Norway at $3.75 @ $4 for Bars, and $4.75 @ $5 for Shapes. *Plate Iron* continues active and firm, with upward tendency and quotations unchanged. We quote: Tank at $3.20; Refined, $3.30; Shell, $3.85; Flange, $4.85 and Tubes unchanged at 40 % discount from list. *Sheet Iron* continues active at unchanged prices. We quote: Sheet Iron, 4¢ @ 4½¢; ditto Refined, 5¢ @ 5½¢; Galvanized, 10¢; Russia, 11¢ @ 12¢. *Steel.*—The last to respond to the movement in other classes of finished Iron is quotable at advanced figures. We quote Best English Cast, 14¢ @ 15¢; American ditto ditto, 12¢ @ 12½¢; Bessemer Machinery, 5¢ @ 6¢; Wedge and German, 7¢; English Spring and Calking, 7¼¢ @ 7½¢; American Spring and Calking, 5½¢ @ 6¢; Zinc, 4¢ @ 4¼¢; Sleigh Shoe, 3½¢. *Nails.*—The companies have issued a new list on the basis of $3.05, net. *Other Metals.*—The trade in metals other than Iron is active with steady demand; there is no quotable change in prices with the exception of Ingot Copper, which is firm at a slight advance. We quote: Ingot *Copper* at 16¾¢ @ 17¢; Sheathing, 24¢; Braziers, 26¢; Bolt, 25¢; Copper Bottoms, 29¢; Yellow Metal, 17¢; Yellow Metal Bolts, 20¢. *Lead.*—We quote Pig Lead at 5¼¢ in car lots and 5½¢ in small orders; Bar, 7¢; Pipe, 7¢; Sheet, 7½¢; Tin lined Pipe, 15¢; Tin Pipe, 35¢ less 10 %. *Spelter* shows little change. We quote $5.25 by carload. Small lots bring $5.50 @ $5.75. Sheet Zinc is in fair demand at 7½¢ @ 7½¢. *Tin* is in fair demand at unchanged prices. We quote 21¢ @ 23¢ for Straits and English. *Tin Plates.*—The market is firm at quotations. We quote: Charcoal Bright at $6 @ $6.25; Ternes at $5.62½ @ $6; Cokes, $5.50 @ $5.55; ditto Ternes, $5.62½ @ $6.—*Commercial Bulletin.*

LOUISVILLE.

Messrs. Geo. H. Hull & Co., Commission Merchants, report to us as follows, under date of August 16, 1881: Most of large buyers have purchased what they need for immediate future, and the demand is not large. Prices, however, are very firm, and furnaces are asking an advance. The last sales of standard brands of No. 1 Mill Iron were at $19 for Cold-short, and $20 for Neutral. Our quotations are for cash:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$27.00 @ 29.00
No. 2 " "	25.00 @ 27.00
No. 1 Southern, Charcoal	23.50 @ 24.00
No. 2 " "	22.50 @ 23.00
No. 1 Hanging Rock, Stonecoal and Coke	23.00 @ 24.00
No. 2 Hanging Rock, Stonecoal and Coke	21.50 @ 22.00
No. 1 Southern, Stonecoal and Coke	23.00 @ 23.50
No. 2 " "	21.50 @ 22.00
"American Scotch"	21.00 @ 22.00
Silver Gray	20.00 @ 21.00
Scotch	24.00 @ 25.00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neutral	21.00 @ 22.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	19.50 @ 20.50
No. 2 Stonecoal and Coke, Cold-short and Neutral	18.50 @ 19.50
No. 1 Missouri and Indiana Red-short	25.00 @ 27.00
White and Mottled, Cold-short and Neutral	17.00 @ 18.00

CAR WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold-blast	35.00 @ 41.00
Alabama and Georgia, Cold-blast	35.00 @ 40.00
Kentucky Cold-blast	35.00 @ 40.00
Hanging Rock, W. B	29.00 @ 33.00

W. B. Belknap & Co., Iron and Steel Merchants, Nos. 113 and 115 Main street, report to us as follows, under date of August 20: Bars are very firm. All the mills are asking from $2.50 to even $2.60 for large lots, according to assortment. A healthy boom has taken possession of the market, and were it not for lessons of two years ago, might run into the same extreme. The Cincinnati mills, though they have made a determined resistance, will not, we opine, be able to withstand the pressure much longer of the very profitable prices going, and we look to see them start up on a compromise agreement of some sort. When they do it will ease up the market considerably. The severe drouth is beginning to tell on business, and the more prudent are exercising extra caution in their credits. Sheet is simply not to be had. We can only hope for favorable circumstances for the utmost production to meet the requirements of the time.

CINCINNATI.

August 21.—*Pig Iron.*—No change of note during the past week; transactions have been confined to smaller orders from consumers for immediate use, and at about the prices of last week. The rolling mills of this region remain silent, except "Globe No. 2." It has but a part of its machinery in operation, and on non-union labor. Sales in the past week have been at about following quotations: Hanging Rock Charcoal No. 1, $27; good, $26.50; Coke, $22.50 @ $23 for No. 1; $1 less for No. 2; Stonecoal No. 1, $22.50; No. 2, $21 @ $22; S. G. Softeners No. 1, $21.50; good, $21; No. 2, $20; No. 3, $19 @ $19.50; Coke Forge, $21; Stonecoal, $19 @ $20.50; Scrap, 50¢ @ 75¢ for Cast; Wrought, $1 @ $1.15; Scrap Car Wheels, $29 @ $30; Bar Iron, $2.25 @ $2.35 card rates.

BALTIMORE.

W. N. Wyeth, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of August 22: Activity in the trade continues ruling unabated, with the demand far in excess of supplies. Stocks are much diminished and broken, causing great trouble and difficulty in filling orders as promptly as desirable. Values are firm and unchanged:

Ref. Bar Iron, 1 to 6 x ¾ to 1	₩ lb 2½ @ 2¾¢
" " 1 to 4½ x 1½ to 2	₩ lb 2¾ @ 2¾¢
" " ¾ to 2, Round and Square	₩ lb 2½ @ 2 ¾¢
Hoop Iron, 1½ wide and upward	" 3½ @ 3½¢
Band Iron, from 1¼ to 4 in. wide	" 3 @ 3¼¢
Horse-shoe Iron	" 3¼ @ 4 ¢
Norway Nail Rods	" 5¾ @ 6½¢
Black Diamond Cast Steel	" 13½ @ 14½¢
Machinery Steel	" 9 @ 9½¢
Cast Spring Steel	" 8 @ 8½¢
Common Horse Nails	" 10 @ 14 ¢
Perkins' Horse shoes ₩ keg of 100 lbs	$4.37½
" Mule shoes	5.37½

ST. LOUIS.

Messrs. Hoffer, Plumb & Co., Pig Iron and Iron Ore Merchants, 417 Pine street, write us, under date of August 20: The tone of the market is better than it has been for some time past, and prices are firm at following quotations:

HOT BLAST CHARCOAL.

Missouri	$26.00 @ 27.00
Southern	26.00 @ 26.50
Ohio	28.00 @ 29.00

COKE AND COAL.

Missouri	26.00 @ 27.00
Southern	23.00 @ 24.00
Ohio	24.00 @ 25.00

MILL IRONS.

Southern	20.50 @ 21.50
Red-short	24.00 @ 25.00

CAR WHEEL AND MALLEABLE IRONS.

Missouri	28.00 @ 30.00
Southern	35.00 @ 38.00
Ohio	32.00 @ 42.00

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

London, Eng., Aug. 9, 1881.

THE OUTLOOK

at the moment is quiet, although fairly good, with a considerable amount of work actually in hand, but with no animation worthy of special attention in any department of the open market. There is little doubt that we are doing a large aggregate turnover, seeing that the Board of Trade returns show heavier exports during the last month, and we have other evidence in support of the statement that in several lines of iron we are producing at a high rate. In spite of all these circumstances, however, we have not anything approaching to a strong market, nor is that consummation a possibility, so long as our yards and warehouses are made the regular receptacles of huge piles of iron which is not wanted by consumers. Speculation still fails those who are in one breath bidding and begging for it, and the next are doing their very best to scratch and kill it in its very inception and initiation. Plainly and emphatically, the public have tired of throwing their money into the Glasgow iron ring, so that the game there is mainly kept alive on "differences" of a few pence or fractions of a penny per ton, for the benefit of and by those to whom some sort of "movements" in warrants has become a necessity of daily existence. As showing, in some measure, the great growth of the make and stocks of pig iron of late, Mr. Jeans the secretary of the Iron and Steel Institute and of the British Iron Trade Association, has to-day issued the subjoined figures, which are to June 30, 1881:

STOCKS OF PIG IRON

	Production. Tons.	June 30th, 1881. Tons.	31st Dec., 1880. Tons.
Cleveland	1,359,849	431,326	331,124
Scotland	571,422*	567,155†	495,850†
West Cumberland	432,101	85,251	65,000
South Wales	470,502	63,696	61,000
North Wales	29,067	5,700	8,787
S. Staffordshire	140,000	62,500	55,000
Lincolnshire	108,250	35,414	25,000
Lancashire	369,178	92,511	85,000
N'thamptonshire	103,528	45,171	21,000
N. Staffordshire	141,944	42,559	35,000
W. & S. Yorkshire	153,941	83,807	50,000
Derbyshire and Notts	197,539	53,471	30,000
Shropshire	42,500	34,000	30,000
Gloucester, Wiltshire	18,000	6,200	5,500
Total	4,134,821	1,608,761	1,298,261
Add makers' stocks in Scotland—Unkown			243,150
Total			1,541,411

* Estimated. † Stocks in warrant stores only.

	Tons.
The stock of pig iron on January 1, 1881 was	1,541,411
The production of pig iron during the first half of 1881 was	4,134,821
Total	5,676,232
Deduct stock, *June 30, 1881	1,851,721
Consumption in first six months of 1881	3,824,521

* Makers' stocks in Scotland estimated at the same figure as on January 1, 1881.

Of the quantity of production returned for the six months ending 30th June, 1881, 3,445,399 tons are actual returns made to the association, and 689,422 tons are estimated, including the whole make of Scotland; making a total of 4,134,821 tons. Of the stocks of pig iron returned on the 30th June, 1881, 1,563,761 tons are actual returns, and 45,000 tons are estimated; making a total of 1,608,761 tons. The stock of pig iron in warrant stores and in makers' hands on the 30th June, 1881, is equal to 12¼ weeks of the consumption of the first six months of 1881.

This return, it will be observed, assumes that makers' stocks in Scotland have not increased since Jan. 1 last, whereas there are excellent reasons for supposing that in many cases they have been largely augmented—probably nearly doubled. Adding Scotch makers' stocks, as at the beginning of the year, 243,150 tons to the 1,608,761 tons set down by Mr. Jeans, we have a grand total of 1,851,911 tons on June 30, since when Scotch warrant stores have received 7000 tons additional, Cleveland stocks 5000 tons more, and there has been a growth elsewhere, in the aggregate probably amounting to 30,000 tons. We have, therefore, nearly 1,900,000 tons of surplus pig iron in this country, or fully equivalent to three months consumption at the highest pressure which our foundries, forges, mills, &c., are capable of bearing. Outside all this is the surplusage of Scotch and English pig iron in bond in your ports, amounting to 100,000 or 120,000 tons, according to recent returns. Such being the case, the idea of any early considerable advance in quotations may be dismissed as being chimerical and extremely improbable. I don't want to prophesy, but I do venture to place the foregoing little piece of vaticination on the record. I would not say even this were I not pretty safe about it.

Leaving crude iron and turning to the manufacturing branches, there is a more satisfactory and encouraging state of affairs. The majority of the works are fairly employed—indeed, many of them are quite busy. All kinds of constructive and heavy manufactured ironwork are in request, and special lines—such as sheets, hoops, fencing wire, common bars, tube strips, black and galvanized sheets—enjoy a brisk call in almost every direction. Very much of this augmented output is on export account. The home market has had a trifling spurt, induced by orders forestalling the harvest, but drummers are not sending home good order sheets at the moment, and are finding it difficult to book new business so long as the ingathering of the harvest is not an accomplished fact. In the South of England the bulk of the corn crops has been harvested in excellent condition. Throughout the Eastern and Midland counties cutting is in vigorous progress, and will be completed in the course of about a week. Further North the harvest will be two to three weeks later. The results obtained so far are said to be about an average. The straw is very short, and much of the wheat is thin on the ground, but the ears are exceptionally well filled, and the grain itself is so robust that it will doubtless fill out well. The showers we have latterly been favored with are most useful to the farmers, as bringing strong second crops of grass, strengthening the turnips, potatoes, &c., and generally doing good. On the whole, then, the 1881 season should count as a favorable one, as compared with several of its immediate predecessors. In any case it will save a great deal of money to the country, and should directly and indirectly lead to an increased expenditure in respect of home manufactures. To yourselves I am inclined to the impression that a good harvest here is, in some respects, a loss, while in others it is a gain. With plenty of corn of our own we need less of your breadstuffs, it is true, but with our people more prosperous for that reason we consume much larger quantities of your canned fruits and fish, bacon, lard, cheese and other provisions. The broad outcome, consequently, is more of the nature of a displacement than a disruption. It is from this standpoint, indeed, that I get the best argument for free trade between the two countries. It comes out somewhat in this wise: England, to be prosperous, must manufacture largely. When England is prosperous she buys extensively of American food products, therefore the States should assist in keeping England busy by admitting her manufactures free. There's a piece of Cobden Club logic for you. No charge—I make you a present of it. It should be the function of Great Britain to manufacture for the world, while the whole world obligingly grows the raw materials and the food needed in this realm!

SCOTCH PIG IRON

is weaker and lower than at the date of my last report. In warrants there has been a drop of several pence, and some of the makers' brands are also cheaper. In the ring no business of importance has been transacted, many of the principal operators being away for their vacations, in addition to the general quietude which characterizes all the raw iron branches. The shipments, too, have been very unfavorable for some weeks, those for last week having been 9285 tons only, as against 10,015 tons during the same week of 1880. To Connal's stock 662 tons only were added last week, making the total 573,620 tons, as against 455,342 tons a year ago and 495,850 tons at Christmas last. To date, Scotch shipments have decreased 102,677 tons, while the importations of Cleveland pig into Scotland have increased 37,883 tons. There are 120 furnaces blowing, as compared with 117 this date 1880. For ballast pig 42/6 is now asked, alongside. Writing from Glasgow, August 6, James Watson & Co. said: "This week the iron market has been characterized by dullness and an absence of business, prices being a shade lower all round. Monday being a holiday there was no market, and on Tuesday only a small business was transacted in Warrants from 46/9 to 46/7, cash. On Wednesday the price rallied to 46/9, and yesterday forenoon 46/10 was paid, but afterward it gave way to 46/8 per ton. To-day the market was flat and business was done from 46/6½ to 46/4½, cash, closing buyers at the latter figure and sellers near. The shipments last week were 9285 tons, as compared with 10,015 tons for the corresponding week of last year." We quote:

	No. 1	No. 3.
G. M. B., at Glasgow	47/	45/
Gartsherrie, at Glasgow	54/9	48/6
Coltness, "	56/3	48/6
Summerlee, "	55/	47/
Langloan, "	56/3	49/
Carnbroe, "	51/	46/6
Calder, "	55/	48/6
Glengarnock, at Ardrossan	51/	47/3
Eglinton, "	47/3	44/
Dalmellington, "	47/6	44/6
Shotts, at Leith	56/	49/
Kinneil, at Bo'ness	47/6	45/6
Carron, at Grangemouth	48/6	47/6

CLEVELAND IRON

is quiet and slow. The monthly returns of the Ironmasters' Association for July show particulars of which the following is a short abstract: Make of Cleveland pig in district, 171,466—decrease on month of 1031 tons; make of other kinds of pig, including hematite and spiegel, 50,897 tons—decrease, 1426 tons; furnaces blowing on Cleveland iron, 92—decrease, 2; furnaces on other iron, 25—increase, 1; makers' stocks of Cleveland pig, 148,895 tons—increase, 1556 tons; makers' stores of ditto, 83,135 tons—decrease, 1517 tons; in public stores, 204,584; total stocks, 436,644 tons—net increase on month, 5318 tons. Total shipments of July from Middlesboro', pig alone, 89,580 tons. Current prices for G. M. B., net, cash, in Tees are:

No. 1 Foundry	41/3	Mottled	35/9
2 "	39/3	White	35/3
3 "	37/3	Refined Metal	52/6
4 "	36/9	Kentledge	38/6
4 Forge	36/3		

At Bolckow Vaughan's recently, nearly 5000 tons of Bessemer steel are said to have been made in one week, but I have at present no details.

THE WEST COAST

of Cumberland and the Furness district of Lancashire, together our principal producers of hematites, appear to be in the prolonged enjoyment of an exceptional prosperity. Hematities are in strong demand, with large shipments and firm prices. Mixed parcels of pig, Nos. 1 2 and 3, may be quoted 56/ to 57/, and makers' brands as under:

	No. 1.	No. 2.	No. 3.
Cleator	63/	62/	61/
Lonsdale	56/6	55/6	54/6
Workington	56/6	55/6	54/6
West Cumberland	57/	56/	55/
Lowther	56/8	55/8	54/6
Moss Bay	57/	56/	55/
Distington	56/6	55/6	54/6
Harrington	56/8	55/6	54/6
Solway	56/6	55/6	54.6
Maryport	...	...	55/

There are 58 furnaces in and 23 out of blast. Last week's shipments were 19,947 tons of pig, and 8929 tons of steel rails and blooms. It is again reported that a large Sheffield firm are about to remove their Bessemer plant to the vicinity of Workington, on the West Coast, so as to save cost of carriage on the pig iron.

THE BOARD OF TRADE RETURNS

for the month of July are of a more favorable nature than had been anticipated, particularly as regards the exports. The total value of our imports was £32,151,284, or £1,201,311 less than in July, 1880, but £1,965,212 more than the same month of 1879. For the seven months ended July 31, 1881, the figures were £230,964,920, or £13,648,428 below the values of the same portion of 1880. The exports of July are set down as having been worth £20,429,889—an increase of £159,310 over July, 1880, and £3,818,767 beyond July, 1879. The value for the seven months was £129,738,364—an increase of £1,834,049 over 1880, and of £24,300,749 over 1879. Taking the two totals here shown, it would appear that there has been a balance of trade against us this year equal to £101,226,356. The principal items of export comprise the following for the month of July, 1881, only:

Articles.	Quantities. 1880.	Quantities. 1881.	Values. 1880.	Values. 1881.
Firearms, No.	15,162	17,736	£24,574	£28,518
Copper, unwt., cwts.	21,629	37,634	70,518	120,275
Copper, wrt., cwts.	34,552	18,001	122,741	71,342
Mixed or yellow metal Sheathing, cwts	33,821	27,904	97,674	84,681
Coal, &c., tons	1,749,944	1,863,938	769,906	820,153
Hdw and cutlery	...	...	319,116	326,070
Pig, tons	139,516	139,047	413,171	374,817
Bar angle—Bolt and rod	20,337	21,923	147,106	171,258
Iron rails, tons	10,745	9,517	74,566	64,709
Steel rails, tons	53,798	65,100	389,397	418,649
Railroad of all sorts, tons	71,407	84,705	549,949	565,574
Wire (except telegr. wire), galvanized or not, tons	3,768	5,746	58,642	78,685
Hoops, sheets and boiler pits, tons	22,057	27,287	262,347	309,395
Tin plates, tons	17,121	21,428	329,748	375,050
Cast or wrt., tons	27,265	25,561	370,945	341,262
Old for re-manufacture, tons	9,981	8,004	48,849	30,177
Steel, unwr'ght, tons	3,298	16,193	98,616	164,734
Mf. steel & iron, tons	1,144	1,503	74,630	98,450
Lead — Pig, rolled sheet, piping and tubing, tons	3,209	4,414	52,229	67,402
Steam engines	...	...	246,474	417,042
Other descriptions of machinery & millwork	...	...	622,678	509,543
Plate and pltd. and gilt wares	...	...	19,882	19,403
Tel. w. & apparatus con. therewith	...	...	229,640	77,807
Tin (unwrt.), cwts.	9,055	8,591	38,788	40,647
Zinc or spelter, cwt	22,931	12,723	17,168	10,716

TO THE UNITED STATES

we sent as per appended figures, which are compared with those for the same month of 1880:

Article.	Month of July. 1880.	Month of July. 1881.
Earthenware and china, £	74,644	69,488
Hardware and cutlery, £	45,415	50,518
Iron—Pig, tons	27,124	40,347
Bar, angle, bolt and rod, tons	1,524	1,150
Railroad, all, tons	14,845	27,182
Hoops, sheets, &c., tons	3,610	4,784
Tin plates, tons	11,186	16,618
Cast or wrought, tons	1,968	482
Old iron, tons	2,896	5,946
Steel, unwrought, tons	1,183	13,750
Lead, tons	10	28
Steam engines, £	252	25,707
Other machinery, £	35,526	13,263
Tin, cwts	212	933

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

Paris, Aug. 7, 1881.—*Metals.*—There has been a moderate amount of trade at slightly better rates for Copper, Tin and Lead. We quote toward the close: *Copper*, Chili Bars, 156 25 @ 158.75 francs per 100 kilos.; the price of Ingots and Slabs has risen to 163.75 @ 164.25; while pure Corocoro Ore declined to 156.25, best selected remaining steady at 166.25. *Tin.*—We quote Banca and English Refined, 245; and Billiton, Straits and Australian, 243.75. *Lead* has advanced to 37 @ 38; *Spelter* remains at 42.75 @ 42.50. *Iron.*—There is great activity. The Northern rolling mills have got more business than they can attend to, and at the Valenciennes meeting have fixed the price of No. 2 first class Merchant Iron at 18 francs, with 1 franc difference between classes and 2 francs between numbers. In spite of this rise Flooring is still sold at Paris at 19.50, but this does not include the local dues. The next Valenciennes meeting will be held on August 25th. In the Haute-Marne prices are firm at the ensuing quotations: Coke Merchant, 19; Mixed, 21; Machine ditto, 20.50 @ 21; Sheets, 24; Axles in the rough, 20.50 @ 21; Wire Nails, No. 18, 27.50; No. 20 Iron Wire, 23 @ 25, all delivered at the works. In the Meurthe and Moselle, the demand for "Affinage" Pig has slackened a little: the blast furnaces have consequently turned their attention more to "Moulage" production, reducing, for the moment, the output of the former. They quote Gray "Affinage," 6.60, and "Moulage," 7.90 @ 8 francs per 100 kilos. *Coal.*—At Paris, there is great dullness, at the North and in the Pas-de-Calais there is a good demand at unaltered prices. Shipments at St. Etienne have been much lighter.

BELGIUM.

(Revue Universelle.)

Brussels, Aug. 7, 1881.—*Iron.*—There is still a most active demand for all classes of railroad material, strengthened by the result of the late adjudication of rolling stock for the government lines. But in spite of all this, the improvement in Merchant Iron is very slow. This is to some extent due to the absence of all speculation. Rolling mills, at present Pig and Merchant Iron prices, seem to clear a living profit, and they prefer to go on at this moderate remuneration rather than screw up prices, and thereby perhaps check consumption, to be repented of afterward. Speculators, seeing this disposition of theirs, hold aloof, and the entire situation thus remains a sound one. It is to be hoped that it may be kept so, for we may otherwise have a repetition of what occurred in 1879-1880, finally resulting in injury to legitimate interests. The strength of the situation here of course receives a great deal of support from what is going on in France, in the Moselle and Sarre region, the lower Rhenish and Westphalian districts, as well as in Upper Silesia. Indeed, in the former region another advance of 4 marks per ton is obtained by rolling mills. An export firm, on shares, has been formed at Antwerp, under the style of Julius Van der Laat & Co. This is going to be a concern which will stimulate Belgian export vigorously. It is certainly a move in the right direction, at a moment when all maritime nations are making great efforts to extend relations with distant foreign countries. *Coal.*—The trade therein develops normally and satisfactorily at the moderate figures ruling.

GERMANY.

(Cologne Gazette.)

Dortmund, Aug. 2, 1881.—*Iron.*—The amelioration in the Iron branch seems to gradually spread to all departments; but as for its probable duration opinions differ very much. As, however, we have to deal with the present moment in this report, and not with the future, it should be mentioned that most departments have been more active during the week at improved rates. Gray Pig Iron is in good request, and so is Bessemer; the same thing may be said of Spiegeleisen, with an advance of a couple of marks in all of them. With respect to rolling mill products it may be remarked that thick sheets are prominent in point of active inquiry and of improvement; 5 marks advance is now asked. Foundry Pig does not yet follow in the wake of the general upward tendency. Thin Sheets are rather less firm. Pillars and corners are more urgently inquired after; this may also be said of Rod Iron; all these goods have risen still further. The same good tendency is pushing upward the price of Hoop Iron and Wire. But the greatest movement is noticeable in Steel, in consequence of important commands, both from Spain and Italy, with more in prospect from both these countries as well as from France. The United States are likewise more actively looking round in the European market. A Belgian agent is making inquiry for America for Steel ingots just at present. At the Magdeburg Railroad Co.'s steel rail adjudication for 5000 tons last week, the same went 10 @ 14 marks per ton higher than at the late Eastern Railway bids. The improvement is less rapid in the ensuing departments: Steam boiler shops, bridge building, foundries, machine shops, locomotive and car making establishments; the former two are getting on comparatively best of them. All small Iron manufacture flourishes, also for France on Belgian orders. *Coal* is stiffening.

(Borsenhalle.)

Hamburg, Aug. 8, 1881.—*Iron.*—Advices from Upper Silesia are favorable. Pig Iron is rising; most blast furnaces have sold out for the third quarter. The rolling mills have got plenty of orders, and now obtain paying rates. Coal is most active in that region. In the Moselle and Sarre districts some fresh advance in Iron is put on record week after week; all rolling mills have raised prices 4 marks per ton. Coal moves off satisfactorily. The excitement and rapid improvement in Iron in the Rhenish Westphalian country remain unabated; it almost looks as though they were going too fast about it. Our Dortmund correspondent writes to-day: "The rise here is uninterrupted, especially in Pig Iron; more business would be done if the blast furnaces had not most of them sold all they can turn out during the current quarter. Merchant Iron seems to be run up altogether too wildly; the rolling mills of Duisburg, Oberhausen, Essen and Gelsenkirchen suddenly assume great airs and treat their customers rather inconsiderately, while this is not yet the case in our immediate vicinity. The Steel Rail makers have a great deal of work flowing in upon them, not only for the supplying of Domestic lines, but also for the United States and Mexico. Italy is also buying, and Holland still purchases extensively for Java, again requiring 9000 tons for the latter island. Our Rail manufacturers are so busy that they cannot attend any more to orders for Steel Ingots themselves, but buy them elsewhere if they receive any commands for these. All other branches also see business crowd upon their hands from week to week. The bridge building works have received a number of orders for mostly minor bridges, and roofs for railway stations and Coal sheds, as well as turrets for boring establishments. The import of Pig Iron into Germany during the fore half of the current year has been 96,774 tons, and the export 116,705; last year these two figures were respectively 87,821 and 109 141. The import of Steel Rails was 907 tons, and the export 119,881, against 874 and 126,339 last year during the same time. *Coal* is doing very well. The import during the first half year into Germany has been 791,480 tons, and the export 3,206,446, against last year 980,288 and 3,503,331. The Coke import was 91,733, and the export 191,702, against 13,677 and 206,954 in 1880." *Metals.*—Not much business has been transacted. Lead is quiet; English Pig, 16 @ 16 50; ditto Sheet, 16 75 @ 17.20; German Pig, 15.20 @ 15.40, and Spanish, 17 50 @ 17.80. Copper is unaltered within the range of 66 @ 75; Tin is upheld at 96 @ 101. Spelter inactive at 15.75 @ 16, spot and "to arrive," for Silesian. All in marks the 50 kilos.

AUSTRIA.

(Austrian Trade Journal.)

Vienna, Aug. 6, 1881.—*Iron.*—There has not been much of a change during the week. The larger works are busy enough; orders received and those promised will probably suffice to keep them so for some time to come. This favorable position is, of course, reflected in the higher prices now ruling. The Bohemian, Moravian and Silesian works recently combined to raise the price of rod Iron 50 kreuzers per 100 kilos., but they now intend establishing a still higher basis. As for the Austrian and Styrian rolling mills, they are not yet prepared to follow in the wake of this movement. These have too frequently had occasion to repent of late years, whenever they attempted to screw up prices too fast; they first want to see the market become steadier at the altered rates elsewhere resolved upon by makers. Thus doubt is expressed in Bohemia as to whether the recent raising of the price of Sheet Iron there by 1 florin per 100 kilos. can be sustained. Pig Iron is no more as depressed as it was some time since, but it remains weak, even at the moderate figures reigning. The Styrian Pig Iron combination may be considered as good as terminated. In agricultural implements and tools, and all sorts of other tools and hardware activity is kept up. The individual purchases are moderate in size, but the aggregate is considerable. The fusion of Alpine Iron works is getting on very well, and this month several general meetings will come off for the purpose of perfecting matters. Meanwhile, the generally improved outlook, both at home and abroad, has had the effect of hardening the Iron quotations, which may be given as under: Pig Iron, 44 @ 52 florins per ton; Merchant Iron, 100

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This is a 10-inch sweep Brace, with a gear-wheel speeded about three to one, to be used for drilling and also for boring in places where there is not room to revolve the Brace Sweep. By an ingenious device the large gear wheel can be put on at three different angles with the Brace Sweep, adapting it for use in narrow or cramped places. When not needed the gear wheel can be removed in one second, leaving a plain Brace. This Brace is made of steel, and is heavily nickel-plated, with rosewood handle and lignumvitæ head. The jaws are of forged steel and will center and hold firmly Round Twist Drills from ⅛ to 7-16 of an inch in diameter. Also, Square Shank Bits and Drills of all sizes. Also, Square and Flat Screw Driver Bits. In fact, it will hold perfectly tool shanks of any size or shape. There is no other chuck in existence which will do this. It is our purpose to furnish everything in the line of Bit Braces and Breast and Hand Drills of a style and quality superior to anything else in the market.

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Same discount as Breast Drills.

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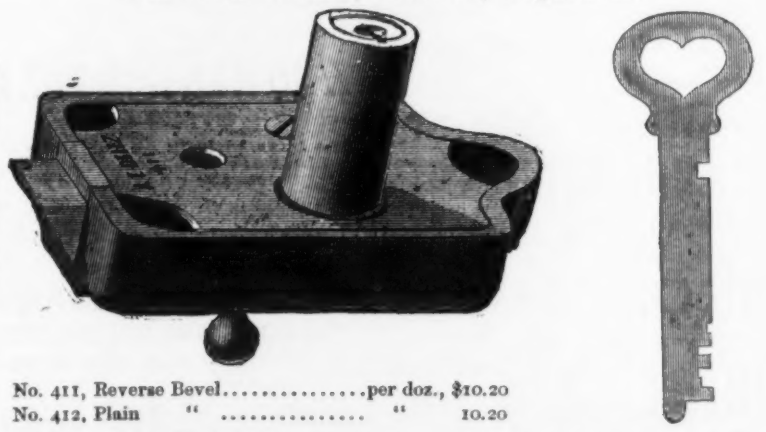

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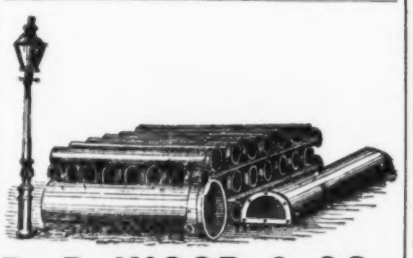

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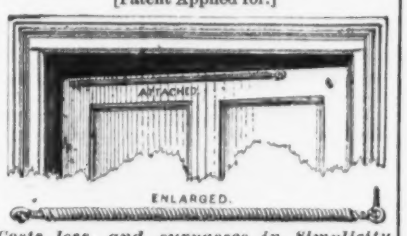

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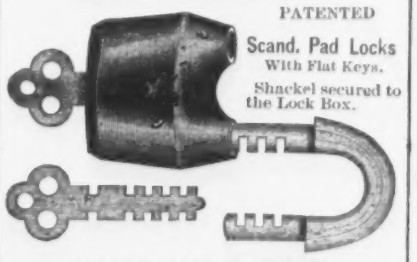

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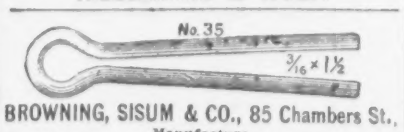

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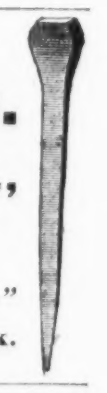

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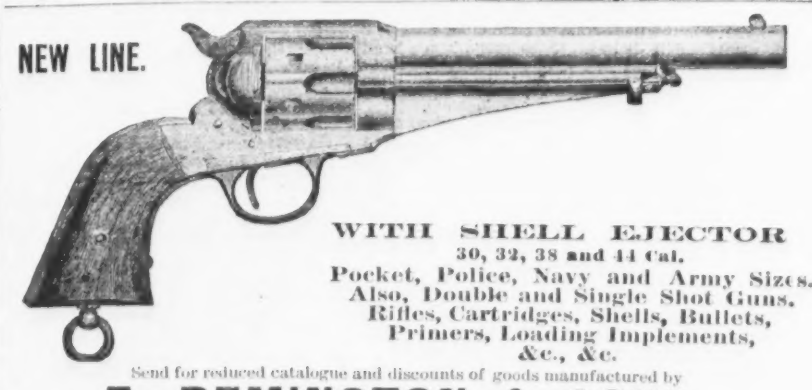

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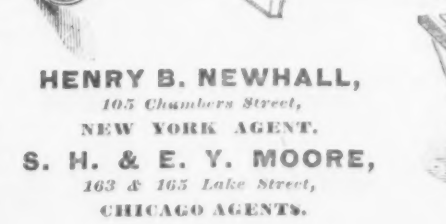

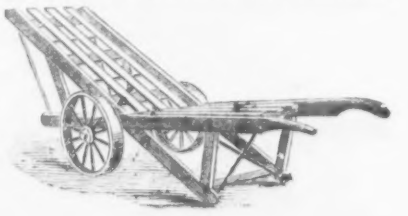

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@ 118; Sheets, 150 @ 180, and Pillars, 115 @ 118 *Metals* have been moderately active, without any change of moment.

(*Industrial News.*)

VIENNA, Aug. 7, 1881.—*Iron.*—The improvement in the Iron trade in Austria is more exclusively confined to heavy material. Of Steel Rails some further sales have been effected—11,000 tons for the Austrian government railroads and 4700 for the Crown Prince Adolphus Railway. Next to Steel Rails, Sheet Iron, Pillars and Corners are most in request. The advance in Iron is so far most pronounced in Hungary, and less so in Austria proper, where Bohemian producers underbid each other. The Wohlert Locomotive shops, at Berlin, have received from an Austrian company an order for 16 Locomotives, to cost together 650,000 florins. *Coal* still remains rather dull.

RUSSIA.

(*Journal de St. Petersbourg.*)

ST. PETERSBURG, Aug 5, 1881.—*Iron.*—A decree has just been issued ordering that henceforward Iron and Steel in sheets of width up to 18 inches, hitherto paying a duty of 35 copeks per pud, are to pay 50 copeks instead, without any reference to their width.

HOLLAND.

(*Koch & Vlierboom.*)

ROTTERDAM, Aug. 9, 1881.—*Tin.*—Soon after the late sale held by the Netherland Trading Co., on July 27, Banca Tin improved under heavy transactions from 54.25 per 50 kilos to 55.25, while Billiton rose to 55. These figures are still obtainable to-day.

EAST INDIES.

(*Schmidt, Kustermann & Co.*)

PENANG, July 2, 1881.—*Tin.*—The market opened $28.15, subsequently rising to $28.22½ per picul, but soon receded to $27.15 for Larrote and $27.05 Junkceylon, whereupon it again recovered a little to $27.50, the closing quotation. For Europe and America 2500 piculs were taken, while Chinese took for Eastern ports 4300, including a resale of 800 piculs taken for China. *Exchange* has fluctuated very little, closing at 3/9, 4 months' sight bank bills on London.

(*Gilfillan, Wood & Co.*)

SINGAPORE, July 7, 1881.—*Tin*—The market has been dull, and sales for the fortnight have been only about 160 tons. Prices have ranged from $28.40 @ $27.85 per picul, closing at $28 per picul, with more sellers than buyers. *Freights*—For New York. Cargo is not sufficient for going ships. Nothing has been doing in the way of fresh charters during the fortnight. The Mercury has cleared with 918 piculs Tin on board. *Exchange*—£3. 10/¼ @ £3. 9/¾. *Shipments*—Of Tin from the Straits settlements to the United States during the first six months have been 34,239 piculs, against 71,740 in 1880; 48,641 in 1879; 35,328 in 1878; 29,818 in 1877, and 21,593 in 1876.

Trading in Mexico.

A Mr. F. A. Ober writes from the City of Mexico respecting the difficulties experienced by traders in that country, as follows:

A disappointed dealer in agricultural machinery met me the other day in Puebla. During the excitement attending the visit of the Chicago merchants to Mexico, it was thought that all Mexico needed was improved agricultural implements to enable it to take rank with the great nations of the world. An enterprising Chicago firm forthwith shipped down a large lot, including the latest inventions in mowers, reapers, threshers, &c., with several men to instruct the natives in their use. I met one of these men—the others had left the country—and he was, to use his own expression, "in a frame of mind." Said he: "These people have just about worried me to death. Here I've been here more'n a year, and how many mowers and reapers do you think I've sold? Well, sir, I ain't sold one! These Mexicans are just a caution to snakes! Why, they come here and get one of my machines and take it out on their plantations and smash it all to pieces, and then say it ain't good enough for 'em. And the worst of it is, I have almighty hard work to get the pieces of that machine back to the shop. They'll never buy what they can steal or cheat a body out of. No machinery is good enough for 'em. Here are Mexicans who've lived all their lives without seeing an improved machine of any kind, and who've ploughed their land all their lives with a stick, that are just too wise to learn how to do anything. A few men have got all the land, and they keep it. The only way is to tax the land, for at present these owners of large haciendas that cover leagues and leagues of territory, don't pay a cent of tax. The working people are only slaves, the best of them getting only two reales a day and find themselves. It's no wonder that everybody's a thief.

"Look at the haciendas all over the country; they are like forts, not built for protection from Indians, but from their own people. Every night the great gate is locked and whatever is behind those stone walls has to stay in, and whatever is outside has to stay out, till morning. Everything on the farm is taken in under cover, not even one of those old wooden plows, patterned after the first one Noah patented in the ark, is left in the field: at sunset you will see the laborer driving home with the plow beam over the yoke, and in the morning he brings it out again. If one of our American plows was left in one of these fields over night it would be taken to pieces and distributed over the country in forty places, and half of it pawned. And as for a harrow, they wouldn't leave a tooth in it! Speaking of plows, what do you suppose these brutes do with one of our Yankee plows when they get it? Why, the first thing they do is to saw off one handle and make it as near as possible like their old wooden ones; then they do everything they can think of to break it, and fall back on the wooden institution which they've used a thousand years. Here I am with a stock of machinery that would set up a first-class establishment in the States that is just rusting to pieces; and these people are only waiting till I'm tired out, when they expect to get it all for nothing."

Under the auspices of Yale College, Mr. Leonard Waldo has established a horological and thermometric bureau at the Winchester Observatory, the first of its kind in the United States. From its first annual report we learn that the success of Mr. Waldo's efforts has been very gratifying. Many certificates of rates of time-pieces have been issued, and a system of regular time service has begun throughout Connecticut, aided by a State subsidy of $2000 per annum. A number of railroads now regularly receive the standard time, and manufacturers—among them J. B. Sargent, Mallory, Wheeler & Co., and others—have placed in their respective places of business telegraphic instruments which continuously repeat the beats of the Observatory clock.

Tests of Phœnix Columns.

Messrs. Clarke, Reeves & Co., of Phœnixville, Pa., have submitted to the American Society of Civil Engineers the following as the results of a series of tests made at the Watertown Arsenal with full-sized Phœnix columns, which show that Gordon's formula does not express the true strength of these columns:

TABULATED STATEMENT OF TESTS OF COMPRESSION OF TWENTY PHŒNIX COLUMNS.

No. of experiment.	Length of column.	Weight. Lbs.	Sectional area. Sq. in.	Total compression under loads. 300,000 lbs.	Total compression under loads. 200,000 lbs.	Elastic limit. Total lbs.	Elastic limit. Lbs. sq. in.	Ultimate strength. Total lbs.	Ultimate strength. Lbs. sq. in.	Load sustained after deflected. Deflected, inches.	Load sustained after deflected. Sustained, lbs.	Load sustained after deflected. Deflected, inches.	Load sustained after deflected. Sustained, lbs.
1	28 feet.	1,142	12.062	0.190 inch.	......	......	......	424,000	35,150	2.730 1.800	282,000	4.550 3.300	216,000
2	28 "	1,153	12.181	0.180 "	......	......	......	416,000	34,150	2.480	306,000	3.980	263,000
3	25 "	1,034	12.233	......	0.255 inch.	342,000	27,960	431,500	35,270	4.357	274,000	6.102	218,000
4	25 "	1,023	12.100	0.168 "	0.264 "	......	......	424,000	35,040	1.715 0.244	348,000	4.005 0.486	280,000
5	22 "	920	12.371	0.160 "	0.243 "	......	......	440,000	35,570	......	......	......	......
6	22 "	......	12.311	0.152 "	0.236 "	......	......	423,000	34,360	0.200	357,600	8.000	214,000
7	19 "	773	12.023	......	0.198 "	......	......	425,200	35,365	3.640 0.112	318,000	10.530 0.830	157,000
8	19 "	777	12.087	0.139 "	0.213 "	354,000	29,290	446,000	36,900	1.770 1.800	364,000	2.480	350,000
9	16 "	650	12.000	0.120 "	......	......	......	439,000	36,580	......	......	2.090	365,000
10	16 "	650	12.000	0.116 "	......	......	......	439,000	36,580	3.220	342,000	4.930	305,000
11	13 "	536	12.185	0.092 "	0.142 "	342,000	23,890	449,000	36,857	1.440 0.234	406,000	6.400 0.480	268,000
12	13 "	531	12.069	0.091 "	......	......	......	449,000	37,200	2.200 0.340	390,000	5.510 1.450	284,000
13	10 "	415	12.248	......	0.110 "	330,000	26,940	446,800	36,480	......	......	......	......
14	10 "	418	12.339	......	0.109 "	350,000	28,360	449,100	36,397	......	......	......	......
15	7 "	291	12.265	0.054 "	......	360,000	29,350	468,000	38,157	......	......	0.535	458,000
16	7 "	284	11.962	......	......	354,000	29,590	517,000	43,300	......	......	2.110 0.850	472,000
17	4 "	164	12.081	0.31 "	......	......	......	598,000	49,500	......	......	......	......
18	4 "	164¼	12.119	0.25 "	0.042 "	340,000	28,050	621,000	51,240	......	......	......	......
19	8 inches.	27½	11.903	0.008 "	0.013 "	......	......	680,000	57,130	......	......	......	......
20	8 "	27⅛	11.903	0.007 "	0.011 "	......	......	682,000	57,300	......	......	......	......
21	25 ft. 2.65 in.	1,561	18.30	0.115 "	0.178 "	......	......	659,000	36,010	......	......	......	......
22	8 ft. 9½ in.	544	18.30	0.045 "	0.067 "	540,000	29,510	772,000	42,180	......	......	......	......

Philadelphia Novelty Mfg. Co.

It is a source of wonder that "novelties," as a branch of manufactures, hold a large and important place, never apparently being out of demand nor out of season. Most of the goods which are started under the head of novelties, in a few years become standard, and then we suppose are classed as "notions," or "Yankee notions." We have a list before us of the novelties made by the Philadelphia Novelty Mfg. Co., 821 Cherry street, Philadelphia, Pa., and a glance through it and a consideration of the prices develops a curious fact. The goods are all patented—absolute monopolies—yet the prices are such as would seem to indicate to an outsider that the competition must be of the closest and sharpest kind. We suppose it is, however, the result of far-sighted business policy. Patents and low prices give an absolute monopoly, with the result that the public is greatly the gainer thereby.

One of the first things on the list which is practically useful in the counting-house and office is the "Novelty staple driver." This is put up in a neat little kit. There are first 1000 staples of assorted sizes, 500 suspension rings, which are like the staples, but have a ring in addition by which a document may be hung up, and then there is the staple driver and automatic clincher. These are put up in a neat box, and by means of them a great variety of binding, &c., can be done. From paper fixtures of all kinds we go through a long list of articles, including mincing knives, can openers, glass cutters, hay forks, self-feeding staple setters for wire fences, and find the latest article an improved garden tool. Whether it shall be called a rake, hoe, spade, scraper, fork, sod cutter or post-hole cleaner is a question, for it can be set for any of these and do the work well. It can also be used for a fruit gatherer. It has a shovel blade and a rake head which can be used separately or together, and set in any one of 18 or 20 different positions. The blade is 4 inches wide and some 5 inches or more long. The tool seems to be very useful for almost any of the numberless light operations around the garden or orchard. The machinery by which these various tools are made is a study, scarcely any machine resembling anything that has ever been used before. They have "special" work to do, and in almost every respect they are themselves special machines.

Wages and Cost of Living.

That an appreciation may be obtained of the condition of labor in this city during the last 10 years, the following tables have been prepared, showing the actual rates of wages paid for several kinds of labor and the cost of living at the same time. The first table shows the weekly hours of labor and the wages paid by the week in New York city and its vicinity in 1878 and 1881:

Occupations.	1878. Hours.	1878. Wages, full time.	1881. Hours.	1881. Wages, full time.
Bricklayers	59	$12 to 15	59	$18 to 24
Masons	58	12 to 18	59	15 to 21
Carpenters and joiners	59	9 to 12	59	12 to 18
Gasfitters	60	10 to 14	59	15 to 21
Painters	58	10 to 16	59	15 to 18
Plasterers	59	10 to 15	59	15 to 21
Plumbers	59	12 to 18	59	18 to 21
Slaters	59	10 to 15	59	15 to 21
Blacksmiths	60	10 to 14	60	12 to 21
Bakers	86	5 to 8	72	8 to 14
Bookbinders	60	12 to 18	60	10 to 15
Shoemakers	pc.	12 to 18	pc.	10 to 14
Butchers	70	8 to 12	pc.	18 to 25
Cabinetmakers	60	9 to 13	60	15 to 18
Coopers	60	12 to 10	59	9 to 15
Coppersmiths	60	12 to 15	60	12 to 15
Cutlers	60	10 to 13	60	10 to 14
Engravers	60	15 to 25	60	15 to 20
Horseshoers	59	12 to 18	59	15 to 24
Millwrights	60	10 to 15	60	15 to 21
Printers	60	8 to 18	60	15 to 24
Saddlers and harnessmen	60	12 to 15	60	12 to 15
Sailmakers	56	12 to 18	56	12 to 15
Tinsmiths	60	10 to 14	60	10 to 15
Tailors, custom work	pc.	10 to 18	pc.	18 to 25
Brass founders	60	10 to 14	59	15 to 21
Laborers, porters, &c	60	6 to 9	60	9 to 15

The following table, furnished by H. K. & F. B. Thurber & Co., shows the cost of living in the years 1878 and 1881:

Food and necessaries.	1878.	1881.
Flour, bbl., 196 lbs	$6.50 to 7.50	$7.00 to 8.50
Beef, roasting, lb	.12 to .16	.14 to .18
Beef, soup, lb	.06 to .08	.08 to .12
Beef, rump-steak, lb	.14 to .16	.15 to .18
Beef, corned, lb	.08 to .12	.10 to .14
Veal, forequarter, lb	.08 to .10	.09 to .11
Veal, hindquarter, lb	.10 to .12	.12 to .16
Veal cutlets, lb	.20 to .24	.14 to .16
Mutton, forequ'ter, lb	.09 to .10	.09 to .11
Mutton, h'ndqu'ter, lb	.12 to .14	.12 to .15
Mutton chops, lb	.14 to .16	.16 to .18
Pork, fresh, lb	.08 to .10	.14
Pork, salted, lb	.08 to .10	.12
Pork, bacon, lb	.08 to .10	.16
Pork, ham, lb	.08 to .12	.14 to .16
Pork, shoulder, lb	.08 to .10	.08 to .10
Pork, sausage, lb	.08 to .10	.10 to .12
Lard, lb	.10 to .12	.16 to .18
Codfish, dry, lb	.06 to .07	.06 to .07
Butter, lb	.25 to .32	.24 to .30
Bread, loaf, 22 oz	.05	.05
Bread, loaf, 28 oz	.08	.08
Bread, loaf, 36 oz	.10	.10
Cheese, lb	.12 to .15	.12 to .14
Potatoes, half peck	.18 to .20	.14 to .16
Rice, lb	.08 to .10	.07 to .09
Beans, quart	.07 to .10	.10 to .12
Milk, quart	.08 to .10	.08 to .10
Eggs, dozen	.25 to .30	.18 to .22
Oatmeal, lb	.04 to .05	.04 to .05
Tea, lb	.50 to .60	.40 to .50
Coffee, lb	.20 to .30	.18 to .28
Sugar, lb	.08 to .10	.08 to .10
Molasses, gallon	.60 to .70	.55 to .75
Soap, common, lb	.07 to .10	.05 to .06
Starch, lb	.08 to .10	.06 to .08
Coal, half ton	3.00	2.50 to 2.75
Coal, quarter ton	1.75	1.62 to 1.75
Coal, ton	5.25	5.00 to 5.50

In regard to the retail prices of other necessaries of life, it will be observed that the schedule includes a wide range of prices. It is a difficult thing to give a standard price where there is both a range in quality and in the terms of purchase. Grocery stores and meat markets, which sell exclusively for cash and deal in the lowest quality of articles, will give quite a different range of prices from those which do a credit business and handle better grades. It is thought that an average of the figures quoted would express the cost of the article, although the lower prices probably represent more nearly the qualities and prices paid by the laboring classes.

One fact disclosed by an examination of the above statements is the great increase of wages in the building trades during the last three years. In 1878 bricklayers earned from $12 to $15 a week; now they receive from $18 to $24, and are in some places striking for $27. This shows an increase of nearly 50 per cent. in this short time. In nearly all the building trades wages have increased about 25 per cent. The pay of laborers, such as porters, has increased from 30 to 40 per cent., and in all the trades represented there is shown to be an increase of 10 to 50 per cent., those trades which employ the most men generally having received the greatest concessions. In 1878 there were thousands of idle men in the city and it was with difficulty that employment of any kind could be obtained; but now the demand for both skilled and unskilled labor is great.

The Trenton *Gazette* says: "The old Camden and Amboy Railroad shops, located about a mile from Bordentown, have at last been leased to a company from New York for a term of 30 years. They are incorporated under the name of the Bordentown Locomotive Works, and have taken possession. Already they have had a force of men tearing out old timbers and replacing them with new. They have a large number of orders on hand for engines, and expect to employ several hundred hands. Mr. Samuel B. Dougherty, formerly master mechanic of these shops in the days of the old Camden and Amboy Railroad, is with this company."

The Board of Directors of the Permanent Exhibition Company at Philadelphia notify owners of exhibits in the building to remove them on or before October 1, as the possession of the building must, according to the terms of the sale, be given to the purchasers by November 1. A resolution was also adopted withdrawing the personal property of the company from private sale, and ordering it to be disposed of at auction on October 12 and 13.

Notwithstanding the fact that large deposits of iron pyrites are known to exist in Virginia and in other states in close proximity to tidewater, large quantities of cupriferous iron pyrites are about to be shipped to this country from Spain for the manufacture of sulphuric acid at Bergen Point. It is difficult to see why American mines cannot compete with those of Rio Tinto.

The Reading Railroad Company, at the close of 1880, had 54 locomotives adapted for the use of anthracite slack, of which 13,000 tons were consumed by them during the year. The saving is estimated at about $30,000. Nearly all the stationary boiler furnaces use fuel of a similar character, but of lower grade.

The use of steel as an addition to the white pig used in making malleable castings is increasing abroad. Scrap steel has been largely used in this country for some time.

Mr. Alexander D. Elbers, of Hoboken, N. J., has taken a patent, dated August 9, 1881, for the treatment of furnace slag by casting it in cumulative layers.

In the Forman shaft at Virginia City, Nev., the temperature at a depth of 100 feet is 50 degrees; at 500, 68; at 1000, 81; at 1500, 101, and at 2100, 119.

New South Wales produced 1,575,497 tons of coal in 1878.

The Iron Age Directory

and Index to Advertisements.

NEW YORK WHOLESALE PRICES, August 24, 1881.

METALS.

IRON.—DUTY Bars, 1 to 1½c ₩ lb; Sheet, Band Hoop and Scroll, 1¼ to 1¾c. ₩ lb; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ lb; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. ₩ 100 lbs. Boiler and Plate, 1½c. ₩ lb.

Iron—AMERICAN		
Foundry No. 1	₩ ton	24.50 @ 25.00
" No. 2X	₩ ton	22.0c @ 22.50
Gray Forge	₩ ton	21.00
SCOTCH.		
Eglinton	₩ ton	21.00
Carnbroe	₩ ton	22.50
Coltness	₩ ton	23 50@ 24.00
Glengarnock	₩ ton	22.50 @ 23.00
Gartsherrie	₩ ton	23.0c @ 23.50
Rails.		
Iron	₩ ton	$48.00 @ 49.00
Steel (at mill)	₩ ton	55.00 @ 65.00
Old Rails T'k	₩ ton	28.00 @ 29.00
Old Rails D H	₩ ton	30.00@ 30.50
Scrap.		
Wrought Scrap ₩ ton		28.00 @ 30 00
Bar Iron, from Store.—		
Common Iron:		
¼ to 2 in. round and square	₩ lb	2 4c
1 to 6 in. x ⅜ to 1 in	₩ lb	
Refined Iron		
¼ to 2 in. round and square	₩ lb	2.6 @ 2.7c
1 to 6 in. x ⅜ to 1 in	₩ lb	
1 to 6 in. x ¼ and 5-16	₩ lb	2.8 @ 2.9c
Rods—⅜ and 11-16 round and square	₩ lb	2.7 @ 2.8c
Bands—1 to 6 x 3-16 to No. 12	₩ lb	3.2c
Norway Nail Rods		6¼ @ 6½c

Sheet Iron.

	Common American	R. G. American.
10 to 20	₩ lb 3¾	5
21 to 24	₩ lb 4	5
25 to 26	₩ lb 4⅛c	5¼
27	₩ lb 5 c	5⅛
28	₩ lb 5 c	5⅛

	B.B.	3d qual.
Galvanized, 10 to 20	₩ lb 7¾c	7c
" 21 to 24	₩ lb 8¼c	7½c
" 25 to 26	₩ lb 9c	8c
" 27	₩ lb 9½c	8½c
" 28	₩ lb 10½c	9c

Patent Planished ₩ lb 10½c; B, 9½c
Russia 11½ @ 12½c
American Cold Rolled ₩ lb 5 @ 7½c

COPPER.—DUTY: Pig, Bar and Ingot, 4c; Old Copper 4c ₩ lb. Manufactured (including all article of which Copper is a component of chief value), 45 % ad valorem.

American Ingot ₩ lb See Trade Report

SHEATHING BRAZIERS COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, 16oz. per sq. ft., and over per lb 26c
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz. ₩ sq. ft. ₩ lb 28c
Braziers Copper 10 oz and 12 oz., ₩ sq. ft. ₩ lb 30c
Lighter than 10 oz. ₩ sq. ft. ₩ lb 32c
Circles less than 8½ in. in diameter ₩ lb 29c
Circles 8½ in. diameter and over ₩ lb 32c
Segment and Pattern Sheets ₩ lb 29c
Locomotive Fire Box Sheets ₩ lb 26c
Sheathing Copper, over 12 oz. ₩ sq. ft. ₩ lb 24c
Bolt Copper ₩ lb 26c
Copper Bottoms ₩ lb 27c
No Copper is Sheathing except 14x60 inches and not to exceed 34 oz. to the sq. ft.

TINNING.

4X8 ₩ sheet 9c
All other size Sheets, 2½c. per square foot.
For tinning both sides, double the above amount
O'REILL'S PATENT PLANISHED COPPER.—Net.

14X48		
14 and 16 oz. and heavier	₩ lb	34c By the case. ₩ lb 33c
12 oz. and lighter	₩ lb	37c " " ₩ lb 36c

Boiler Sizes.

7 in., 14X52. 8 in., 14X56. 9 in., 14X60.
4 and 16 oz. and heavier. ₩ lb 36c By the case. ₩ lb 35c
(And all sizes not over 20 in. wide.

24X48X30X60.

14 and 16 oz. and heavier	₩ lb	38c
12 oz.	₩ lb	41c

Brass.

Brown & Sharp's Gauge the Standard for Metals. Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis. Nominal. June 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantity than 100 lbs. add 30 ₩ lb.

HIGH BRASS.

All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in 39c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive 36c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 38c
56c ₩ lb advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 8 is Platers' Brass, at 43c
Sheets 24X48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c
Printers' Rules 45c
Sheets wider than 30 in. and under 40 in 47c
" 40 in. and over 49c
Circular Sheets, in diam. from 4 in. to 14, inclusive 40c
" " over 14 " 20, " 45c
" " " 20 " 30, " 49c
" " " 30 " 40, " 55c
" " " 40 in 59c

LOW BRASS.

4c ₩ lb more than High Brass.
Gilding Metal, 8c ₩ lb more than High Brass.
Platers' or Gold Metal { In Bars 48c; Sawed 51c; Planed or Polished 43c

FOR SLITTING.

Metal in width ½ in. to ⅝ in. to No. 28, inclusive, 1c. ₩ lb advance.
Metal, in width 2 in to 1 in. thinner than No. 28, 2c. ₩ lb advance.
Metal, in width 1 in. to ⅝ thinner than No. ₩ lb advance.
Metal, in width ⅝ in. to ¼, inclusive, not thinner than No 28, 2c. ₩ lb advance.
Metal, in width ⅜ in. to ¼ thinner than No. 28, 5c. ₩ lb advance.
Metal, ¼ in. in width and less, 10c. ₩ lb advance.
Any of the above widths cut to particular lengths, add 7c. ₩ lb.

GERMAN SILVER MARKET METAL AND WIRE

	Market Metal.	Wire.
4 per cent., 12 inch to No. 26	$0.63	$0.70
6 " " "	65	76
10 " " "	84	.86
15 " " "	.74	1.03
18 " " "	.80	1.12

German Silver Sheets over 12in. wide and weighing more than 10 lbs., $2.00 ₩ lb.
Advance 2c. for each additional inch in above 18in., and 2c. ₩ lb on each No. thinner than Nos. 26 to 30, inclusive.
All German Silver thinner than No. 36 is Platers, at 8c ₩ lb additional.
German Silver Scrap one-half less than net price of German Silver Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.33	$0.37	$0.13
No. 21	.36	.40	.06
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No 24	.40	.44	.50
No. 25	.43	.47	.54
No. 26	.45	.49	.56
No. 27	.48	.53	.48
No. 28	.52	.68	.63
No. 29	.55	.59	.66
No. 30	.58	.62	.72
No. 31	.62	.66	.78
No. 32	.66	.70	.84
No. 33	.70	.74	.94
No. 34	.74	.78	1.03

Spring Wire 2c ₩ lb advance.
Flat, Square and Half Round Wire 5c ₩ lb advance on Round Wire.
Fancy Wire not less than 10c ₩ lb advance of Round Wire.
Brass Rods, No. 8 and larger, not less than 2 feet lengths, 38c.
Wire straightened and cut, smaller than No. 8 and not less than 2 feet lengths, 45c.
Wire and Rods less than 2 feet lengths, special rates
Twelve cents per lb extra for spooling on 1 lb spools.

MISCELLANEOUS.

Brass Pail Ears	$0.49
Brass Door Rail	.45

SCRAP.—dis. Nominal.

Hugo Brass Scrap	12c
Low "	14c
Gilding "	16c

Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis. Nominal.

Plain	No. 2 inclusive above ¾ in. to 3 in.	$0.14
	above 3 in.	.15

Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.

Plain, ⅛ inch	.70
" ¼ "	1.1c
" ⅜ "	1.6c

All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No 20
English, Scotch and Extra Patterns Fancy Tubing to No. 20
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cent ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in. 2 cents per pound advance.

ZINC TUBING—dis 20 %.

Plain	.27
Fancy	.33
Scotch and Extra Patterns	3c

GERMAN SILVER TUBING.—dis 10 %

4 Per cent	.80
6 "	.90
9 "	1.0
12 "	1.20
15 "	1.35
16 "	1.45
18 "	1.50
20 "	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils valued at 7 cents ₩ lb., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ₩ lb; over 11, 3½ cents ₩ lb, and 10 % ad val. Railway Bars, 1¼ cents ₩ lb. Railway Bars, in part Steel, 1 cent ₩ lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.—		
" Best Cast	₩ lb	15½c
" Extra Cast	₩ lb	16½c
" Round Machinery, Cast	₩ lb	10c
" Swaged, Cast	₩ lb	18c
" Best Double Shear	₩ lb	15½c
" Blister, 1st quality	₩ lb	13c
German Steel, Best	₩ lb	11c
" 2d quality	₩ lb	10c
" 3d quality	₩ lb	9c
Sheet Cast Steel, 1st quality	₩ lb	15½c
" 2d quality	₩ lb	14½c
" 3d quality	₩ lb	12½c

ANTIMONY See Trade Report

LEAD.—DUTY 2½c ₩ 100 lbs; old Lead, 1½c ₩ lb. Pipe and Sheet, 2½c ₩ lb.

American	5⅜ @ 5¾c
Bar	6c net
Pipe	7c dis 10 %
Tin Lined Pipe	14c. dis 10 %
Sheet	7½c. dis 10 %
Shot	Drop 7c, Buck. 8c
Chilled Shot	8c

BABBITT METAL.

N. P. U.	₩ lb 7¼ @ 8c
A. 26c; B. 20c; C. 15c.	

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.1c ₩ lb; Electro-galvanized Plates, 2c ₩ lb; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.

Banca	25 @ 26c
Straits	₩ lb 22 @ 22½c
English	22 @ 22½c

TIN PLATES.

I C 10X14 } 14X20 }	Prime Charcoal	$6.25 @ $6.50
I C 12X12	"	6.50 @ 6.75
I X 10X14 } 14X20 }	Charcoal	8.25
I X 12X12	" "	8.50
D C 12½X17		6.75
D X 12½X17		7.75
For each additional X add		2.00

COKE TIN PLATE.

	Best.	Ordinary.
I C 10X14 } I C 14X20 }	$6.00	5.25 @ 5.75
I C 12X12	6.25	5.50@ 5.75

TERNE PLATE

	Prime Char.	2d quas.	Coke.
I C 14X20	$4.50	4.25	5.00 @ 5.25
I X 14X20	7.25		
I C 20X28	11.50	11.00	10.50 @ 11.00
I X 20X28	15.50		
I C 20X200	19.00		
I C 14X20 M. F. Brand			7.50

SOLDER No. 1, 12c @ 13c; No 2, 11c

SPELTER—DUTY: In Pigs, Bars and Plates, $1.50 ₩ 100 lbs.

American, cash	5¾ @ 5½c
Foreign	5⅝ @ 5¾c

ZINC.—DUTY: Pig or Block, 1.50 ₩ 100 lbs. Sheet 2½c ₩ lb.

Sheet, Cask	7c
" Open	7⅛ @ 8c

Paper Stock, &c.

(Dealers' Selling Pric

White Shirt Cuttings, No. 1		6¼ @ 6⅝
" " No. 2		5 @ 5¼
Mill Assorted Whites		5¼ @ 5⅝
Unbleached Muslins		6¼ @ 6½
City Whites, No. 1		4⅞ @ 5
New Canton Flannels		6 @ 6¼
New Seconds, light		4¼ @ 4⅝
" dark		3½ @ 3¾
No. 2, Whites		2¾ @ 2⅞
Cotton Canvas		4⅝ @ 4⅞
Linen Canvas, No. 1		4⅜ @ 4⅝
Seconds, City No. 1		1¾ @ 1¾
" " No. 2		1⅜ @ 1⅝
Colors, per 100 lbs		75 @ 85
Manila Rope		3¼ @ 3½
" Tarred		2⅝ @ 2¾
Gunny Bagging, No. 1		2⅝ @ 2¾
" No. 2		1⅝ @ 2
Kentucky Bagging		4¼ @ 4½
Burlap Bagging, No. 1		3¾ @ 3¾
Tar Shakings		2¼ @ 2⅜
Hemp Twine Stock		4¼ @ 4⅜
Hard White Shavings, No. 1		4¼ @ 4⅜
Soft White Shavings, No. 1		3⅝ @ 4
White Shavings, No. 2, soft		3¼ @ 3⅜
Mixed Shavings, part white		3 @ 3⅛
Ledger and Writing		3¼ @ 3⅜
Solid Stock		3¼ @
Book Stock No. 1, light		1¾ @ 1¾
Old Newspapers		1¾ @ 2
Pure Manilas		2¼ @ 2⅜
Bogus Manilas and Hardwares		1⅜ @ 1¾
Commons		90 @
Binders' Board Cuttings		1¾ @ 1¾
Straw Board Cuttings		1⅜ @ 1¾

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ lb	20c
" Ordinary		6c
" Ivory Drop, fair		12 @ 15c
" " best		25c
Black Paint, in oil	kegs 8c	asst'd cans, 11c
Blue Prussian, fair to best		40 @ 45c
" " " in oil		45 @ 55c
Blue Chinese dry		70c
" Ultramarine		18 @ 20c
Brown, Spanish		14c
" Van Dyke		10@12c
Green, Chrome		15 @ 25c
" " in oil		14 @ 18 @ 25c
" Paris	good 25c; best, 30c	
" " in oil	" 30c;	45c
Iron Paint, Bright Red	₩ lb	2½c
" Brown	₩ lb	1½c
" Purple	₩ lb	3c
" Ground in Oil, Bright Red	₩ lb	5½c
" " " Red	₩ lb	5c
" " " Brown	₩ lb	4½c
" " " Purple	₩ lb	5c
Mineral Paints		1¼ @ 4c
Orange Mineral		10c
Red Lead, American		7½c
" Venetian (N. C.) dry		$1.65 @ $1.70
" in oil	asst'd cans, 11c; kegs, 8c	
" Indian dry		9 @ 12c
Rose Pink		10 @ 15c
Sienna, American, Raw		4c
" Burnt		4½c
" " in oil		10 @ 15 @ 20c
" Raw		11 @ 15 @ 25c
Umber, Burnt		4 @ 8c
" in oil		9 @ 12 @ 15c
" Raw		5½ @ 7½c
" in oil		10 @ 15 @ 18c
Vermillion, Chinese		90c
" English		50 @ 52½c
" Trieste		1.10c
" American, Common		15c
White Lead, American, pure dry		6¼ @ 7c
" " in oil		7½c
White, Paris, English, prime	in bbls. 2 @ 2½c	
Yellow Ochre, French		$1.75
" " in oil	asst'd cans, 11c; kegs, 9c	
" " Vermont	in casks, 1½c	
Yellow Chrome		17 @ 27c
" " in oil		14 @ 18 @ 25c
Zinc White American No. 1, dry		5 @ 5½
" " No. 1, in oil		9c
" " French (Paris) dry		8 @ 10c
" " in oil		10 @ 11c

Oils.

Linseed, Raw in casks and bbls	gal.	55 @ 56c
" Boiled, "	"	58 @ 59c
Bleached Whale	₩ gal.	60c
" Sperm	₩ gal.	$1.00
" Elephant		70c
Signal		70c
Prime Lard		80c
No. 1 Extra		70c
West Virginia		120 @ 130
Drilling		40c
Miners' Oil		44 @ 45c
Fish Oil, pressed		38 @ 45c
Neatsfoot		80
Tallow		6½ @ 6¾c
Machinery		40c
Engine		50c

Sundries.

Asphaltum Cuban		6c @ 8c
" Egyptian		8½ @ 9c
Benzine	₩ gal.	9½ @ 11c
Chalk		⅝c
" Block		⅝c

Dryer, Patent, Am'n	asst'd cans, 9c; keg, 7	
Frostings		40
Glue, White		24 @ 35c
" Sheet		20c
Glaziers' Points, Zinc		8c
Gum, Copal		36c
" Damar		25c
" Shellac, English		44c
" " dark		40c
Litharge, English		7½c
Pumic Stone, selected Lumps		4 @ 6c
" powdered		2½c
Pine Tar, bbls		$4.00
Putty, in bladders		3 c
" in bulk		2½c
Rosin—Common and Good—Strained		$2.07½
E & F		$2.15 @ 2.20
G & H		$2.20 @ 2.40
I & K		$2.75 @ 3.25
M & N		$3.50 3.75
Spirits Turpentine		48 @ 49c
Whiting Spanish		90
Waste, No. 1 Cop		10c
" No. 1 White Machine		10c
" No. 2 "		9½c
" No. 1 Colored		7c
" No. 2 "		6½c
" Washed Machine		9c

Glass.

FRENCH WINDOW GLASS.

Prices current per box of 50 feet.

Single Thick.—Discount 50 & 10 & 5 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$ 6.50	$ 5.75	$ 5.50	$ 5.25
11 x 14 to 16 x 24	7.25	6.75	6.25	6.00
18 x 22 to 20 x 30	9.25	8.50	7.75	7.25
15 x 36 to 24 x 30	10.25	9.25	8.25	
26 x 28 to 24 x 36	11.00	10.00	9.00	
26 x 36 to 24 x 44	11.75	10.75	9.50	
26 x 46 to 30 x 50	13.25	12.50	10.50	
30 x 52 to 30 x 54	14.00	13.00	11.25	
30 x 56 to 34 x 50	15.00	13.75	12.50	
34 x 58 to 34 x 60	15.50	15.00	13.25	
36 x 60 to 40 x 60	17.50	16.00	15.00	

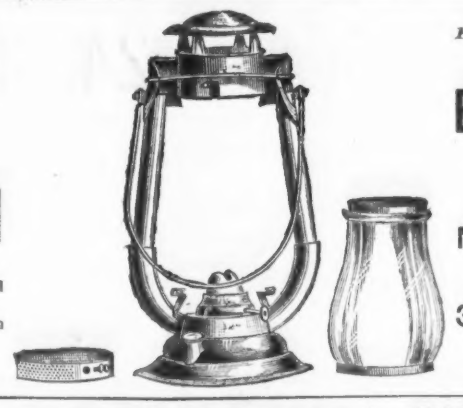
Double Thick.—Discount 50 & 10 & 5 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$ 8.25	$ 7.75	$ 7.50	$ 7.00
11 x 14 to 16 x 24	10.00	9.25	8.75	8.25
18 x 22 to 20 x 30	12.75	11.75	10.75	
15 x 36 to 24 x 30	14.25	13.00	11.75	
26 x 28 to 24 x 36	15.25	13.75	12.50	
26 x 36 to 26 x 44	16.25	14.75	13.00	
26 x 46 to 30 x 52	17.50	16.75	14.25	
30 x 52 to 30 x 54	18.50	17.25	14.75	
30 x 56 to 34 x 50	19.40	18.25	16.25	
34 x 58 to 34 x 60	20.40	19.40	18.00	
36 x 60 to 40 x 60	23.00	21.00	20.00	

An additional 10 per cent. will be charged for all Glass more than 40 inches wide. Any size over 52 inches in length, and not making more than 84 united inches will be charged in the 84 united inches bracket.

MILLER'S
NO. 14
LANTERN

Gives more light and will hold the flame more perfectly than any other Lantern made.



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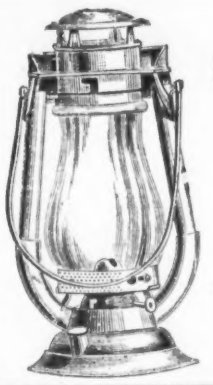
Edw'd Miller & Co.,

Meriden, Conn.,

OR

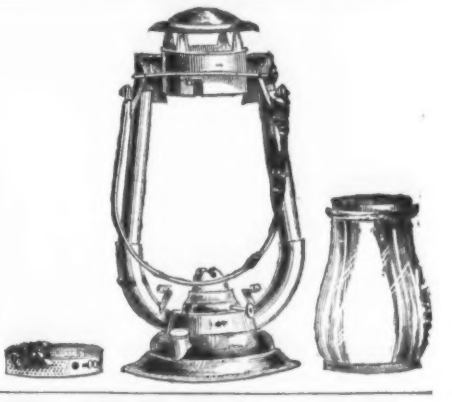
35 Warren St.,

New York.



Manufacturers of

Lanterns,
Brass Kettles,
Machine Oilers,
Kerosene Goods,
Tinners' Trimmings,
&c., &c.



AKRON IRON COMPANY,

AKRON, OHIO,

Sole Manufacturers of

Patent Hot Polished Shafting.

Medal of Superiority awarded at American Institute Fair of 1880.

This Shafting is superior to any in the market, and commends itself to the trade for the following reasons, viz:

1st. It is perfectly straight and round.

2d. It can be finished accurately to any desired gauge.

3d. It will not rust or tarnish easily.

4th. It will not warp or spring in key seating.

5th. Its surface is composed of magnetic oxide of iron, and consequently presents a journal or bearing surface that is unexcelled.

6th. The peculiarity of its manufacture is such as to entail loss in making it, if other than superior stock is used. Those purchasing it may therefore be assured of receiving first-class material.

Price lists, catalogues and references furnished on application.

Where parties desire it we cut keyways or splines any length required, at a moderate charge.

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TRENTON, N. J.

MANUFACTURERS OF

DOOR LOCKS AND HARDWARE,

BRONZED IRON AND BRONZE METAL DOOR TRIMMINGS, BUTTS AND HARDWARE.

CAST BUTTS,
DOOR BOLTS,
WELL WHEELS,
FLUSH BOLTS,
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Having largely increased our facilities and line of goods, we invite the attention of the Trade.

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Wrought Iron Butts, Hinges

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DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

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THE GLOBE MANUFACTURING CO.,

Successors to THE MIDDLETOWN TOOL CO.

Manufacturers of

HARDWARE,

INCLUDING IN GREAT VARIETY THE WELL-KNOWN

"Baldwin" Plane Irons.

(Every Iron of our make warranted a perfect cutter.) ALSO,

Galvanized Hammock or Boat Snaps and Gaff Topsail Self-mousing Ship Hooks, Harness Snaps, Baby Snaps, Washer Cutters, Pocket Wrenches, Amateur Lathes, &c.

MIDDLETOWN, CONN.

Send for Catalogue and Discount Sheet.

SABIN MFG. CO.,

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DOUBLE-ACTING SPRING BUTTS,

SABIN'S LEVER DOOR SPRINGS, For heavy doors,

BOSS AND CROWN SPRINGS, For light doors,

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Laflin & Rand Powder Co.

No. 29 Murray Street, New York,

Manufacture and sell the following celebrated brands of Sporting Powder known everywhere as

ORANGE LIGHTNING,
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more popular than any Powder now in use.

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SAFETY FUSE, FRICTIONAL & PLATINUM FUSES.

Pamphlets showing sizes of grain sent free.

Mineral Wool.

Patented May 31, 1870.

A fibrous material, encasing about 90 per cent. of its volume of air, and therefore a superior

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OF

HEAT AND SOUND.

Being made from the slag of blast furnaces, it is fire-proof and durable in contact with heated surfaces. Readily applied.

Heaviest grade about 25 lbs. per cubic foot. Price, 1 cent per lb.

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HARTFORD, CONN., U. S. A.

For sale by **C. E. JENNINGS & CO., 96 Chambers St., New York,** and the trade generally.

FORGED OX SHOES.

The only Ox Shoe made with patent **concavity** to fit hoof. Also **Flat** Shoes with **two** calks complete, at same price.

Worth double any Malleable Iron Shoe.

Greenfield Tool Co.,

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An Improved Pattern.

Cheap and Durable.

BEST IN THE MARKET.

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Straightening and Cutting Wire

Of all Sizes to any Length.

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Manufacturer of

Sprout's Double and Single Shear

Horse Hay Forks

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HAY ELEVATORS, PULLEYS and GRAPPLES.

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Repairs for Stoves made at Troy, Albany, Rochester, Cleveland, Buffalo, Boston, St. Louis, Quincy, Chicago, Milwaukee and elsewhere, at

W. C. METZNER,

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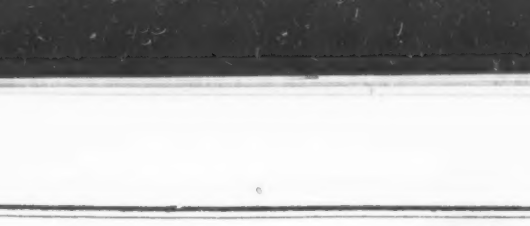
PROVIDENCE, R. I.

LEVERS.



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Prices on Application.

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S. H. & E. Y. MOORE, *163 & 165 Lake St.,* CHICAGO AGENT.

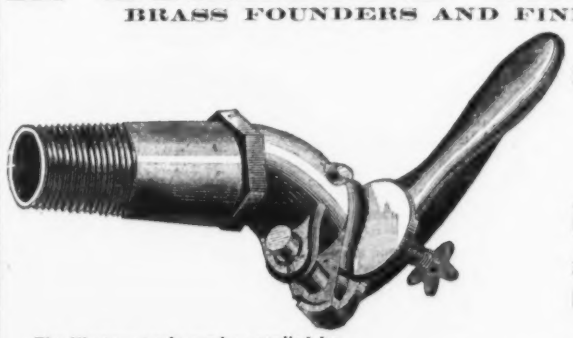
THE GENUINE STEBBINS

MOLASSES & OIL GATES,

MANUFACTURED ONLY BY

E. STEBBINS MFG. CO.

BRASS FOUNDERS AND FINISHERS.



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COMPRESSION

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GROUND KEY WORK.

Send for circular and price list.

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Office of NELSON LYON,

SOLE MANUFACTURER OF

Lyon's Patent Metallic Heel Stiffeners,

Also, Manufacturer of

BRUSHES

Of Every Description,

Nos. 17 & 19 Green St.,

Albany, N. Y., Dec. 8, 1880.

To All Whom it May Concern:

To-day a decree in my suit against G. T. Fisher & Co., of Detroit, for an infringement of my patent, was made and entered, of which the following is an extract:

At a session of the Circuit Court of the United States for the Eastern District of Michigan, held at Detroit &c., on Wednesday, the 8th day of December, 1880. Present, Hon. H. B. BROWN, District Judge.

NELSON LYON *against* GUYON T. FISHER, *et al.*

It is ordered, adjudged and decreed, that the act entitled "An act for the relief of Nelson Lyon and Jeremiah S. James," passed by Congress and approved April 1, 1880, &c., is a good, valid and constitutional act.

That the original patent, bearing date July 9, 1872, and numbered 128,843, granted and issued to Joseph Barsaloux, Jeremiah S. James and Nelson Lyon, when corrected by the Acting Commissioner of Patents, as directed by said act, was a good and valid patent.

That the said Joseph Barsaloux was the original and first inventor of the improvements in metallic stiffeners for boot and shoe heels mentioned and described in said letters patent.

That the Reissued Letters Patent No. 9198, dated May 11, 1880, granted to said Nelson Lyon for an improvement in metallic heel stiffeners for boots and shoes, originally patented as aforesaid, is a good and valid patent; that said Lyon is exclusively possessed of said Letters Patent and the invention thereby secured.

That the defendants, G. T. Fisher & Co., and each of them, have infringed upon the said patents and upon the exclusive rights of said Lyon under the same.

That said Lyon receive of said defendants all the profits, &c., they have made, and in addition thereto all the damage he has suffered by reason of the infringements by the defendants, and also the costs, charges and disbursements in the action.

It is also further ordered, adjudged and decreed, that a perpetual injunction be issued against said defendants, according to the prayer of the said complainant's bill.

You are also hereby notified that the perpetual injunction has been issued and served on the defendants

All questions as to damages and settlements in relation to infringements under my patents must be addressed to and made with my attorney, WILLIAM H. KING, in my care at the above address.

NELSON LYON.

Wilson Bohannan,

Manufacturer of Patent

BRASS PAD LOCKS

For Railroad Switches, Freight Cars, and the Hardware Trade. All sizes, with Brass and Steel Keys, with and without chains.

Patent Horizontal Rim Cylinder Night Latch.

Self-adjusting to doors of any thickness, with Patent Stop and Drawer Back Knob RIGHT OR LEFT HAND.

PASSENGER CAR LOCKS, Bronzed, Nickel-Plated and Japanned

☞ Catalogues and Samples sent upon application. BROOKLYN, N. Y.

New York Wholesale Prices, August 24, 1881.

HARDWARE.

Anvils.
Eagle Anvils American ..... ⅌ ℔ 10c dis 20 %
Wright's ..... 10½c @ 11c
Armitage's Mouse Hole ..... 9½ @ 9¾c
Trenton 10¼c
Wilkinson's ..... 10 c

Anvil, Vise and Drill.
Millers Falls Co., $28.00 ..... dis 20 %

Augers and Bits.
Conn. Valley Mfg. Co. / Douglass Mfg. Co. / Humphreysville Mfg. Co. / Ives / Beecher (French, Swift & Co) / Griswold / Nobles Mfg. Co. / Ensson's Patent ..... dis 40 % from list of Jan 7, 1880
Cook's, Douglass Mfg. Co ..... dis 40&10 %
Snell Mfg. Co.'s C. S. Augers ..... dis 40 %
" " B. Machine ..... dis 40 %
" " C. S Bits ..... dis 40 %
" " Jenning's Bits ..... dis 35 %
Patent Solid Head ..... dis 30 %
Lewis' Patent Single Twist ..... dis 40 %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand-Rail Bits ..... dis 10&10&10 %
Russell Jennings' Augers ..... dis 16⅔&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers dis 10&10&10 %
Imitation Jenning's Bits ..... dis 40@45 %
Ives' "Jennings" Bits ..... dis 33⅓&10 %
Andrews Bits ..... dis 40 %
Expansive Bits, Clark's, small, $18; l'ge. $26 ..... dis 25 %
" " Ives' ..... $20 @ $40—dis 33⅓ %
" " Blake's ..... $20—dis 40 %
" " Parmelee's ..... $20 and $30 dis 33⅓ %
Hollow Augers Ives' / French, Swift & Co ..... dis 15&10 %
" " Douglas ..... dis 15&10 %
" " Bonney's Adjust ..... ⅌ doz $48—dis 25&10 %
" " Stearns' Adjust., ⅌ doz $48—dis 20&10 %
" " Ives' Expansive, each $4.50—dis 30&10 %
" " Universal Expansive, each $4.50—dis 20 %
Woods ..... dis 25 %
Gimlet Bits ..... $7.50 ⅌ gross, dis 45 %
" Diamond ..... ⅌ doz $1.10 dis 20&10 %
" "Bee" ..... dis 35&5 %
Double Cut Gimlet Bits, Shepardson's ..... dis 40 %
" " Ct. Valley Mfg. Co ..... dis 30&10 %
" " Hartwell's ..... dis 60&10 %
" " Douglass' ..... dis 40 %
" " Ives' ..... dis 50 %
Morse's Bit Stock Drill ..... dis 25 %
L'Hommedieu's Ship Augers ..... dis 15 %
Watrous Ship Augers ..... dis 15 %
" Extension Lip ..... dis 30 %

Awl Hafts.
Sewing Brass Ferrule ..... $3.50 ⅌ gross—dis 40&10 %
" " ..... 3.50 " dis 40&10 %
Patent Sewing, Short ..... $1.00 ⅌ doz—dis 40&10 %
" " Long ..... $1.40 ⅌ doz—dis 10 %
Patent Peg Plain Top ..... $10.00 ⅌ gross—dis 40&10 %
" " Leather Top ..... 12.00 " dis 40&10 %

Awls, Brad Sets, &c.
Awls, Sewing, Common ..... ⅌ gross $1.70—dis 25&10 %
Shouldered Peg ..... ⅌ gross 2.45—dis 25&10 %
Patent Peg ..... ⅌ gross .63—dis 25&10 %
Shouldered Brad ..... ⅌ gross $2.70—dis 25&10 %
Handled Brad ..... $7.00 ⅌ gross—dis 25&10 %
Handled Scratch ..... $7.00 ⅌ gross—dis 25&10 %
Socket Scratch ..... $1.00@$1.25 ⅌ doz—net
Brad Sets, Aiken's ..... ⅌ doz $17.00—dis 40&10 %
" No. 42, $10.50; No. 43, $12.50 ..... dis 70 %
" Stanley's Excelsior, No. 1, $9.00 ..... dis 30&10 %
" " " No. 2, 4.80 ..... dis 30&10 %
" " " No. 3, 7.80 ..... dis 30&10 %

Axes.
Single Bit, 4½ to 5¼ and under ..... ⅌ doz $10.00 net
" 4½ to 6 and over ..... ⅌ doz $10.50 net
" Beveled ..... 50 c ⅌ doz advance
Double Bit, 4½ to 5¼ and under ..... ⅌ doz $19.00 net
" 4½ to 6 and over ..... ⅌ doz $20.00 net
" Beveled ..... $1.00 ⅌ doz advance

Axle Grease.—Frazer's ..... ⅌ ℔ 6c

Bag Holders.
Sprengle's Patent, per doz. $18 ..... dis 40 %

Balances.
All Spring Balances ..... dis 15&10 %

Bells.
Hand, Light Brass ..... dis 65&10 %
" Extra Heavy ..... dis 45 %
" White Metal ..... dis 60 %
" Silver Chime ..... dis 20&10 %
" Globe (Cone's Patent) ..... dis 25&10 %
Gong, Abbe's ..... dis 20&10 %
" Yankee ..... dis 30&10 %
" Barton's ..... dis 30&10 %
Crank Taylor's ..... dis 25&10 %
" Brook's ..... dis 50&10&2 %
" Cone's ..... dis 10 %
" Connel's ..... dis 30 %
Lever, Sargent's ..... dis 60&10 %
" Taylor's Bronze or Plated Lever ..... net
" " Japanned Lever ..... dis 25&10 %
" R. & E. M. Co.'s ..... dis 50&10&2 %
Pull, Brook's ..... dis 50&10&2 %
" Western ..... dis 25&10 %
Call ..... dis 25 %
Cow, Common Wrought ..... dis 55 & 10 %
" Western ..... dis 20&10 %
" " Sargent's new list ..... dis 55&10 %
Kentucky "Star" ..... dis 20&10 %
" Sargent's new list ..... dis 55&10 %
Dodge's Genuine Kentucky, new list—

Nos.	0	1	1½	2	3	4	5	6	Hog	
	$12.00	10.00	9.00	8.00	6.00	5.00	3.50	2.50	5.00	dis 50 %

Texas "Star" ..... dis 30&10

Bellows.
Blacksmiths', Common ..... dis 45 %
" Extra and Pittsburgh Pattern ..... dis 20 %
Moulders ..... dis 25 %
Hand Bellows ..... List of Dec. 1, 1879, net

Belting, Rubber.
N. Y. Belting and Packing Co ..... dis. 20@50 %

Bit Holders.
Extension, Barber's ..... ⅌ doz $15.00—dis 40&5 %
" Ives' ..... ⅌ doz $15.00—dis 40 %
Diagonal ..... ⅌ doz $24.00—dis 40 %
Angular ..... ⅌ doz $24.00—dis 40&5 %

Blind Adjusters.—Domestic ..... ⅌ doz $3.00, dis 15 %

Blind Fasteners.
Mackrell's ..... per doz. pairs, $1.00, dis 10 %
Van Sand's ..... Screw pattern, per gro., $10.00 ..... dis 34 %
" old pattern ..... ⅌ gross, $8.50 net
Washburn's Patent ..... ⅌ gross $11.50 net
Merriman's ..... new list net
Mackrell's ..... ⅌ doz. pairs, $0.65, dis. 10 %

Blind Staples.
Barbed, ⅜ in. and larger ..... ⅌ ℔ 11c net
" ¼ in ..... ⅌ ℔ 13c net

Blocks.
Differential Pulley Blocks ..... dis 20 %
Penfield Block Co., Rope and Iron Strap'd ..... dis 40 %
" " " Wrot. Iron Com. bushed. dis 25 %
" " " " " all steel roll'r. dis 10 %
" " " Sheaves " " dis 35 %
Stanley R. & L. Co., Rope and Iron Strap'd ..... dis 40&10 %

Bolts.
Cast Iron Barrel, Shutter, &c ..... dis 55&10 %
Cast Iron Chain (Sargent's list) ..... dis 65&10 %
Bush's Lever and Chain Bolts ..... dis 40 %
Ives' Pat. Door Bolts ..... dis 50 %
Wrought Barrel ..... dis 60&10 %
" Square ..... dis 60&10 %
" Shutter, all Iron, Stanley's list ..... dis 60&10 %
" " Brass Knob. " ..... dis 20&10 %
" " Sargent's list ..... dis 60&10 %
" Sunk Flush, Sargent's ..... dis 75&10 %
" " Stanley's ..... dis 40&7½ %
" B. K. Flush, Com'n. Stanley's ..... dis 50&5 %
" " Ex. Heavy ..... dis 40&10 %
" Plated Knob & Slide Flush " ..... dis 50&2½ %
Carriage and Tire, Common ..... dis 80 %
" " Philadelphia, new list ..... dis 67&5 %
" " Philada. Pattern ..... dis 70&5 %
" " Shelton's ..... (old list) dis 60&10 %
Union Carriage ..... dis 70 %
R. B. & W. Carriage (old list) ..... dis 65 %
Tire, Am. Screw Co.'s, Phila, new list, Nov 1, '79, dis 75 %
" "Bay State" ..... dis 80&10 %
" R. B. & W., new list ..... dis 70&10 %
Stove—American Screw Co.'s ..... dis 40 %
" R. B. & W ..... dis 40
R. & E. Mfg. Co ..... dis 40 %
Plow ..... dis 50 %
" R. B. & W ..... dis 40 %
Machine ..... dis 60 %
Bolt Ends ..... dis 60 %

Borax ..... 10c ⅌ ℔ net

Boring Machines. Upright. Angular.
First quality, no Augers ..... $5.50 $0.75 ..... dis 40 %
Phillips' with Augers ..... 6.50 7.00 net

Boxes.
Interchangeable Shelf Boxes ..... dis 20 %

Braces.
Q. S. Backus ..... dis 50 %
Wilson Mfg. Co ..... dis 10 %
Barber's ..... dis 40&5 %
Spofford's Patent ..... dis 50&5 %
Noble's Patent ..... dis 40&5 %
Ives' Patent Braces ..... dis 50&10 %
Common Ball (American) ..... dis 50&5 %
Amidon's ..... dis 50 %
Barker's Impd ..... dis 40 %
Empire ..... dis 30 %
Buffalo Ball ..... dis 40 %

Brackets.—Shelf (Sargent's) ..... dis 60&10 %
Reading ..... dis 60&10 %

Bright Wire Goods list of Dec. 15, 1879, dis 65&10 %

Bull Rings.—Union Nut Co ..... dis 40&20
Sargent's ..... dis 66⅔&2 %
Hotchkiss' ..... low list dis 35 %
Humason, Beckley & Co.'s ..... dis 60&10 %

Butts
Wrought Brass ..... dis 75&5 %
Cast Brass, Tiebout's ..... dis 30 %
" Corbin's ..... dis 20&10 %
Fast Joint, Narrow ..... dis
" Broad ..... dis
Loose Joint ..... dis
" Japanned ..... dis
" with Acorn ..... dis
" Japanned, with acorns ..... dis
Parliament Butts ..... dis
Mayer's Hinges ..... dis
Loose Pin, no Acorn ..... dis
" Acorns ..... dis
" " Japanned ..... dis
" " Plated Tips ..... dis
(See Trade Report.)

WROUGHT IRON.
Fast Joint Narrow ..... dis 50&10 %
" Lt. Narrow ..... dis 50&10 %
" Broad ..... dis 50&10 %
Loose Joint, Broad ..... dis 55&10 %
Table Butts, Back Flaps, &c ..... dis 60&10 %
Inside Blind, Regular ..... dis 50&10 %
" Light ..... dis 50&10 %
Loose Pin, Wrt ..... dis 55&10 %
" " " Light ..... dis 50&10 %

Spring Hinges:
American Spiral Spring Butt Co., Jap'd ..... dis 25 %
" " " Fancy ..... dis 20 %
Gem Spiral Spring Butts, Japanned ..... dis 25 %
" " " Ornamental ..... dis 20 %
Geer's Spring and Blank Butts ..... dis 25 %
Sabin Mfg. Co.'s Double Acting ..... dis 35 %
Union Spiral Spring, Japanned ..... dis 25 %
" " Ornamental ..... dis 20 %
Union Spring Hinge Co.'s ..... dis 25 %
American Spring Hinge Co.'s ..... dis 25 %
Union Mfg. Co ..... dis 25 %
Bommer's ..... dis 25 %
Buckman's ..... dis 25 %
Blind Butts, Parker ..... dis 70&2 %
" Palmer ..... dis 45&10 %
" Seymour ..... dis 70&2 %
" Shepard's "Double Locking" Nos. 1 & 2 ..... dis 70&2 %
" Shepard's "Noiseless," Nos. 50 & 60 ..... 70&2 %
" Lull & Porter ..... dis 70&10 %
" Nicholson ..... dis 45&10 %
" Huffer ..... dis 50 %
" Clark's, Nos. 1, 3, 5 ..... dis 70&2 %
" Sargent's No. 1, 3 ..... dis 70&2 %
" " No. 17 ..... dis 70&10&10 %
" Reading's Gravity ..... dis 70&5&10 %

Bow Pins.
Hotchkiss' ..... low list net
Humason, Beckley & Co.'s ..... dis 60 %
Sargent & Co's ..... $19.70 and $21.40, dis 60&10&10 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co ..... dis 20
Bradley's ..... dis 25
Beatty's ..... dis 25&5 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Can Openers.
Messenger's Comet ..... ⅌ doz $3.00, dis 25 %
American ..... ⅌ gross $7.40, dis 10 %
Duplex ..... ⅌ doz 24c, dis 15@20 %
Lyman's ..... ⅌ doz $3.75, dis 20 %
No. 4, French ..... ⅌ doz $2.25, dis 55 %
No. 5, Iron Handle ..... ⅌ gross $7.50 dis 10 %
Eureka ..... ⅌ doz $2.50, dis 10 %
Sardine Scissors ..... ⅌ doz $7.00, dis 55 %
Star ..... ⅌ doz $5.00, dis 20@25 %
Sprague ..... dis 40@10 %
"Worlds Best" per gross, No. 1, $12; No. 2, $24; No. 3, $36 ..... dis 50 %

Caps—Percussion, ⅌ 1000.
U. M. C., F. C. trimmed ..... 50c / " F. L. ground ..... 70c } dis 10&5 %
U. M. C. Cen. fire ground ..... 70c / " Double W. proof ..... $1.40 } dis 10&5 %
G. D. & S. B ..... 36c, dis 7½ %
Double Waterproof, in 1 10's ..... $1.40 / Colt's Pistol ..... 70c } dis 10&5 %
F. L ..... 50c / E. B. 1-10, Trimmed ..... 64c / E. B. 1-10 Ground Edge ..... 70c } dis 10&5 %
Musket, in 1-10's ..... 750 net

Cartridges.—Rim ..... dis 60&10&10 %
Central Fire ..... dis 30 %

Cards.—Horse and Curry..new list, July, '81, dis 10 %
Cotton ..... " ..... dis 10 %
Wool ..... " ..... dis 10 %

Carpet Stretchers.
Cast Steel, Polished ..... ⅌ doz $5.00, dis 30 %
" Iron Steel Points ..... ⅌ doz $2.00, dis 45 %
Bullard's ..... dis 25 %

Casters.
Bed ..... dis 40&5 %
Plate and Shallow Socket ..... dis 40&5 %
Deep Socket ..... dis 25&10 %

Cattle Leaders.
Humason, Beckley & Co.'s ..... dis 60&10 %
Sargent's ..... dis 66⅔&10 %

Chain.
Trace, 6½-1-2 ..... ⅌ pair 79c / 6½-10-3 ..... ⅌ pair 70c / 7-10-2 ..... ⅌ pair 86c } dis 40 %
German Halter Chain, New list Oct. 22, '79 ..... dis 50&5 %
" Coil, New list Oct. 22, '79 ..... dis 50&5 %
Covert Halter, Hitching and Breast ..... dis 35 %
Oneida Halter Chain (old list) ..... dis 40 %
Galvanized Pump Chain ..... ⅌ ℔ 10c net
Jack Chain, Iron ..... dis 60&10 %
" Brass ..... dis 50&10 %

Chalk.
White ..... ⅌ gross 60c net
Red ..... ⅌ gross 80c net
Blue ..... ⅌ gross 100c net
White Crayons ..... ⅌ gross 100

Chisels.
Socket Framing, Crossman ..... dis 60&5 %
" " Arlington Edge Tool Co ..... dis 60&10 %
" " Buck Bros ..... new list, dis 22½ %
" " Merrill ..... dis 65&10 %
" " Witherby Tool Co ..... dis 60&10 %
" " Douglass' ..... dis 65&10 %
" Firmers, Crossman ..... dis 60&5 %
" " Arlington Edge Tool Co ..... dis 65&10 %
" " Buck Bros ..... new list, dis 22½ %
" " Merrill ..... dis 60&10 %
" " Witherby Tool Co ..... dis 65&10 %
" " Douglass' ..... dis 60&10 %
" Corner ..... dis 60&10 %
Tanged Firmers extra ..... dis 33⅓ @ 40 %
" Butcher's ..... $5.00 @ 5.25 to £
" Spear & Jackson's ..... 5.00 to £
" Buck Bros. (Shank) ..... 5.25 to £

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron ..... dis 25 %
" Adjustable, Gray's ..... dis 20 %
" " Lambert's ..... dis 20 %
" " Snow's ..... dis 40&5 %
" " Hammer's ..... dis 15 %
" " Stearns' ..... dis 20&10 %
" Cabinet, Sargent's ..... dis 70&10 %
" Carriage Makers', Sargent's ..... dis 60&10 %
" Cord and Tape (T. & S. Mfg. Co.) ..... dis 30 %

Clips, Axle.
Norway or Best ..... dis 40&5 %
Superior ..... dis 65&5 %

Coal Hods.
Griffiths ..... dis 33⅓ %

Cockeyes ..... dis 35&10 %

Cocks, Brass.
Racking ..... new list, July 19, '80 / Globe / Plain Bibbs / Ale and Beer } ..... dis 40 %

Coffee Mills.
Board and Box ..... dis 40 %
Wilson's ..... dis 35&10&5 %
Selsor's Pat ..... $9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.) ..... dis 30 %
French Steel ..... dis 25 %

Combined Dinner Pail and Lantern.
Per doz $15.00 ..... dis 30 %

Compasses, Dividers, &c.
Compasses ..... dis 55 %
Calipers ..... dis 55 %
Dividers ..... dis 55 %
Bemis & Call Co.'s Dividers ..... dis 60&5 %
" " Compasses & Callipers ..... dis 50&5 %
" " Wing & Inside or Outside. dis 50&5 %
" " Double ..... dis 60 %
" " Call's Pat. Inside ..... dis 30 %
Cook's ..... dis 25 %
Excelsior ..... dis 50 %
Miller's Patent ..... dis 25 %

Coopers' Tools.
Bradley's ..... dis 15 @ 20 %

Corkscrews.—Humason & B ..... dis 33⅓ %
Clough's Wire ..... dis 25 %

Corn Knives and Cutters.—Bradley's ..... dis 10 %
Wadsworth's ..... dis 33⅓ %

Crow Bars.
Cast Steel ..... ⅌ ℔ 8¼c
Iron, Steel Points ..... ⅌ ℔ 6¼c

Curling Irons, &c.
⅜, ⅝, ¾ in., $1.80 2.00, 2.40 ..... dis 10 %
Curling Tongs ..... ⅌ doz $3.65, dis 10 %
Pinching Irons ..... ⅌ doz 7.50, dis 20 %

Curry Combs.
Fitch's new list ..... dis 50 %
Hotchkiss' Novelty ..... new list, July, 1880, dis 25 %
" Exclr. Supr. Champion ..... dis 25 %
Lawrence "Perfect" ..... dis 35&10 %
Rubber ..... ⅌ doz $10.00, dis 15 %

Curtain Pins.—Silvered Glass ..... net
White Enamel ..... net

Cutlery.
Meriden Cutlery Co. (Table) ..... net
Am. Miller Bro.'s Cutlery Co ..... dis 25 %
Humason & Beckley, Pocket ..... dis 33⅓ %
The Wm. Rogers Mfg. Co ..... net
Naugatuck Cutlery Co ..... list net
Aaron Burkinshaw's Pocket ..... dis 25 %

Dog Collars.
Embossed Gilt ..... dis 30 %
Leather ..... dis 40 %
Brass ..... dis 40 %
Celluloid ..... dis 40 %

Door Springs.
Torrey's Rod ..... ⅌ doz $2.10, dis 10 %
Gray's " ..... ⅌ doz $1.70, net
Pee Rod ..... ⅌ doz $1.70, net
Warner's ..... dis 15&10 %
Gem (Coil)—
No. 1, Large, Japanned ..... ⅌ doz $4.00 / No. 2, Medium ..... ⅌ doz 2.75 / No. 3, Small ..... ⅌ doz 2.00 } dis 25&10 %
Star (Coil)—For Cop'd, Nickel-Plated, &c. see list.
No. 4, ("Snoo Fly") screen door size ⅌ doz $1.50 / No. 5, Screen Door Size ..... ⅌ doz $2.00 / No. 6, Medium ..... ⅌ doz 2.75 / No. 7, Large ..... ⅌ doz 4.00 } dis 30&10 %
Sabin's Lever ..No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss ..... No. 1, $5.40; 2, $4.20; 3, $3.00. dis 50 %
Sabin's Crown ..... ⅌ doz $2.75, dis 50 %
Philadelphia ..... 5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed ..... dis 20 %
Cowell's ..... No. 1, $18.00; No. 2, $15.00 ⅌ doz, dis 50 %
Rubber, complete ..... ⅌ doz $1.80, dis 10 %
Hercules ..... dis 40 %

Drawing Knives.
Arlington Edge Tool Co ..... dis 65&10 %
Crossman's No. 1 ..... dis 65&5 %
Merrill ..... dis 65&10 %
Nobles Mfg. Co ..... dis 15 %
Bradley's ..... dis 35 %
Adjustable Handle ..... dis 20 %
Witherby Tool Co ..... dis 60&10 %
Douglass ..... dis 65&10 %

Drills and Drill Stocks.
Blacksmiths' ..... each $2.50 dis 10 %
Blacksmiths Self Feed'ng ..... each $7.50, dis 20 %
Breast P. S & W ..... dis 20&10 %
" Hotchkiss ..... dis 25 %
Breast, Wilson's ..... dis 20 %
" Miller's Falls ..... each $5.00, dis 25 %
" Bartholomew's ..... each, $2.50 dis 25&10 %
Ratchet, Merrill's ..... dis 10 %
" Ingersoll's ..... dis 25 %
" Whitney's ..... dis 20 %
" Weston's ..... dis 20 %
" Moore's Triple Action ..... dis 20 @ 25 %
Whitney's Hand Drill ..... dis 50 %
Wilson's Drill Stocks ..... dis 10 %
Automatic Boring Tools ..... each $2.25, dis 20 %

Drill Chucks.—Morse's Beach Patent ..... dis 30 %
" Adjust..each $10.00, dis 30 %
Danbury ..... $8.00, dis 30 %

Egg Beaters.
Dover ..... ⅌ doz. $2.50 dis 2 %
Acme ..... $20 per gross, dis 33⅓&10 %
Standard ..... $24 per gross, dis 33⅓ %
National ..... ⅌ doz $4.50, dis 33⅓ %
Family ..... per gross $15; per doz., $1.50 net

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved) ⅌ 100 $15.00 @ $54.00, dis. 10 %
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved) ⅌ doz $5.60 @ $10.20 dis. 10 %
Storehouse, Duc's Pat.) 12 to 17, $12.00 @ $20.00, dis. 10 %

Emery and Emery Paper.
Regular numbers ..... ⅌ ℔ 4c
Flour and F F ..... ⅌ ℔ 5c
B & A. Emery Paper ..... dis 25@37 %
Sibley's Emery and Crocus Cloth.
Large size, $16; Medium, $10.50 per ream; dis 15 %

Enameled and Tinned Ware.
Kettles ..... dis 45 %
Sauce Pans ..... dis 30 %
Tinned Sauce Pans ..... dis 30 %

Escutcheon Pins.
Brass ..... dis 50 %

Escutcheons.
Door Lock ..... Same discounts as Door Locks
Brass Thread ..... dis 55 %
Wood ..... dis 25 %

Faucets.
Fenn's ..... dis 40 %
Bohren's Pat. Rubber Ball ..... dis 25 %
Fenn's Cork Stops ..... dis 33⅓ %
Star ..... dis 55&10 %
Frary's Patent Petroleum ..... dis 20&10 %
Wood and Metallic ..... dis 40 %
West's Patent Key ..... dis 45 %
Metallic Key, Leather Lined ..... dis 50 %
Cork Lined ..... dis 70 %
Enterprise (Self Measuring) ..... ⅌ doz, $36.00, dis 30 %

Felloe Plates ..... ⅌ ℔ 10c, dis 20 %

Files.
Auburn ..... $5.00 to £, dis 35 %
E. M. Boynton's ..... new list, dis 25 %
J. & Riley Carr ..... 4.50 to £
Johnson & Bro ..... dis 30 %
Butcher's ..... 4.50 to £
Walter Spencer & Co.'s "Diamond" ..... 4.50 to £
Fisher's ..... 4.75 to £
Moss & Gamble ..... 4.50 to £
H. Disston & Sons (new list) ..... dis 40 %
Heller Bros.' Horse Rasps ..... dis 30&3 %
Nicholson ..... dis 30&10 %
New American ..... dis 40 %
Union File Co ..... dis 40 %

Fluting Machines.
Knox, 4-inch Rolls ..... $3.25 each / " 6 " ..... 4.00 " / " 8 " ..... 6.50 " } dis 20 %
Peerless, 4-inch Rolls ..... 4.00 each net
" 5 " ..... 4.75 each net
Eagle, 3½-inch Roll ..... $2.15, dis 20 %
" 5½ " ..... $2.85, dis 20 %
Eureka, No. 1, 7-inch Roll ..... 6.00 each, dis 10 %
" No. 2 5-inch Roll ..... 4.00 each, dis 10 %
Crown ..4½-in. $3.50: 6-in..$4.00: 8-in. $6.50 each dis 20 %
Star ..... 4½ in.. $4.00: 6 in.. $5.00 each dis 10 %
Crown Jewel ..... 6 in., $3.40 each, dis 20 %
American, 5 in., $3; 6 in., $3.40; 7 in., $4.50 each, dis 20 %
Domestic Fluter ..... 1.50 each net
Geneva Hand Fluter, White Metal.. ⅌ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00 ⅌ doz ..... dis 25 %
Shepard Hand Fluter ..... No. 85 ⅌ doz $10
" " " No. 95, $8.00: No. 110, $7.00;
" " " No. 70, $12.00; No. 65, $8.00 ..... net
Clark's Hand Fluter ..... ⅌ doz $15.00, dis 33⅓ %
Combined Fluter and Sad Iron ..... ⅌ doz 15.00, dis 30 %
Buffalo ..... ⅌ doz 10.00, dis 10 %

Fluting Scissors ..... dis 45 %

Fly Traps.
Paragon ..... per doz, $3; net

Forks.
Hay, Manure and Spading ..... dis 50 %
Plated" A 1, Rogers & Bro ..... dis 40&5&5 %
" Reed & Barton ..... dis 40&5&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co ..... dis 25 %
American ..... dis 20 %

Fry Pans.
Burnished, list as follows ..... dis 60 %

No	0	1	2	3	4	5	6	7	8
⅌ doz	$3.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

"Acme" ..... dis 45 %

Gauges.
Marking, Stanley's ..... dis 50&10 %
" Chapin's ..... dis 50&10 %
Wire ..... dis 10&10 %
" Disston's ..... dis 20 %

Gimlets.
Nail and Spike ..... dis 45 %
"Bee" Gimlets ..... ⅌ gross $12.00 dis
"Eureka Gimlets ..... dis 50 %
"Diamond Gimlets ..... dis 40 %
Double Cut, Shepardson's ..... dis 40 %
" " Hartwell's ..... dis 50 %
" " Ives' ..... dis 50 %
" " Douglass' ..... dis 40 %

Glue Pots.
Tinned and Enameled ..... dis 20&10 %
Family, Howe's "Eureka" ..... dis 25 %
" L. F. & C.'s "Handy ..... dis 25 %

Grindstone Fixtures.
Sargent's Patent ..... dis 70&10&10 %
Reading Hardware Co., new list ..... dis 30&10 %

Gun Wads.
U. M. C. B. E. 11 up ..... $2.00 / " 9 & 10 ..... 2.30 / " 7 & 8 ..... 2.00 / P. E. 11 up ..... 3.10 / " 9 & 11 ..... 4.00 / " 7 & ..... 4.90 } dis 5&5 %

Halters.
Covert's Pat. Rope ..... dis 50 %
Horse and Cattle Ties, Covert's ..... dis 50 %

Hammers.
Maydole's ..... dis 15 %
Cheney's ..... dis 25 %
Hartford Hammer Co. (new list July 1, '81) ..... dis 20 %
Humason & Beckley ..... dis 50 %
Verree ..... dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75. dis 25&10 %
Warner & Noble's ..... dis 10 %
Kit's ..... dis 20 %
Yerkes & Plumb ..... dis 15 %
Wilkinson's Smiths' ..... 11½c ⅌ ℔ net

Hand Cuffs and Leg Irons.
Providence Tool Co. Hand Cuffs, $15.00 ⅌ doz / " Leg Irons, $25 ⅌ doz } dis 10 %
Tower's ..... dis 25 %

Handles.—Door or Thumb Latches—

Nos.	0	1	2	3	4	
Per doz	$0.80	1.00	1.18	1.35	1.50	dis 60&10 %

Roggin's Latches ..... per doz 25c@40c net
Bronzed Iron Drop Latches .. ⅌ doz $0.75 @ 0.85 dis 10 %
Jap'd Store Door Handles—Nuts, $1.62; Plate $1.08 no Plate, $0.87 ..... dis 10 %
Barn Door ..... per doz $1.40, dis 10 %
Wrought Chest ..... dis 65&10 %
Surface Chest ..... dis 55&5&10 %
Flush Chest ..... dis 60&10&10 %
Lifting ..... dis 60&10 %
Saw and Plane ..... dis 40&10 %
Boynton's Pat. Loop Saw Handles ..... dis 25 %
" " Centennial Saw Handles ..... dis 25 %
Hammer and Hatchet ..... dis 20 %
Brad Awl ..... ⅌ gross $3.00, dis 20&10 %
Hickory Firmer Chisel, assorted, ⅌ gross $4.50 / " " " large, " 5.00 / Apple " " assorted, " 5.00 / " " " large, " 6.00 / Socket " " assorted, " 3.00 / " Framing " assorted, " 5.00 / File, assorted, ⅌ gross ..... 2.75 / Auger, assorted, ⅌ gross ..... 6.00 / " large ..... 7.00 } dis 20&10 @ 25@10 %
Patent Auger, Ives' ..... dis 25
" Douglass' ..... ⅌ set $1.25, net
" Swan's ..... ⅌ set $1, net

Hangers.
Barn Door, old patterns ..... dis 60&10 %
" New England ..... dis 65&10 %
Challenge ..... dis 50 %
Climax (Anti-Friction) ..... dis 50 %
Sterling Improved (Anti-Friction) ..... dis 65&10 %
Cheritree ..... dis 50 %
Kidder's ..... dis 50&10 %
U. S ..... 4 in., $12; 5 in., $15; dis 00 %
The "Boss" ..... dis. 50&10 %

Harness Snaps.
Henshaw's ... List of 1⅛ changed to 14.00, dis 55 @ 60 %
Judd's ..... " " 14.00, dis 55 @ 60 %
Fitch's (Bristol) " " 14.00, dis 55 @ 60 %
Hotchkiss' ..... dis 10 %
Andrews' ..... dis 50 %
Sargent's ..... dis 65&10 %
"German ..... dis 75 %
Covert ..... dis 40 %
Covered Spring ..... dis 45&10 %

Hatchets.
Isaiah Blood ..... dis 15 %
Shingling, Nos. 1 2 3 ..... ⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ..... ⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ..... ⅌ doz 7.50 8.00 8.50
Hunt's ..... dis 20&10 %
Shingling, Nos. 1 2 3 ..... ⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ..... ⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ..... ⅌ doz 7.50 8.25 9.00
Hurd's ..... dis 35 @ 40
Shingling, Nos. 2 3 ..... ⅌ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ..... ⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ..... ⅌ doz 8.00 .50 10.00
Yerkes & Plumb ..... dis 30
Shingling, Nos. 1 2 3 ..... ⅌ doz $7.50 $8.00 $8.50
Claw, Nos. 1 2 3 ..... ⅌ doz 8.25 8.75 9.25
Lathing Nos. ..... ⅌ doz 7.50 8.00 8.50
Simmon's ..... dis 20
Shingling, Nos. 0 1 2 3 ..... ⅌ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ..... ⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ..... ⅌ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4 ..... ⅌ doz 9.00 10.00 12.00 14.00
" Nos. 5 6 7 8 ..... ⅌ doz 16.00 18.00 20.00 22.00
Collins ..... dis 10 %
Shingling, Nos. 1 2 3 ..... ⅌ doz $6.00 $6.50 $7.00
Claw Nos. 1 2 3 ..... ⅌ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3 ..... ⅌ doz 6.00 6.50 7.00

Hay Knives.
"Lightning" ..... ⅌ doz $20.00 net
Wadsworth's ..... dis 33⅓

Hinges.
Gate, Western ..... ⅌ doz $6.25, dis 65&10 %
" N. E ..... ⅌ doz $10.13, dis 60&10 %
" N. E. Reversible ..... ⅌ doz $6.50, dis 65&10 %
Gate, Clark's No. 1 ..... ⅌ doz $0.00, dis 60 %
" N. Y. State ..... ⅌ doz $0.50, dis 65&10 %
" Automatic ..... ⅌ doz $12.50 dis 40 %
" Common Sense ..... dis 20&10 %
" Seymour's ..... dis 50&10 %
" Shepard's ..... Nos. 10, 20 & 25, dis 50&10 %
Rolled Blind Hinges ..... dis 60&10 %
Rolled Plate ..... dis 60&10 %
Rolled Raised ..... dis 60&10 %
Plate Hinges } 8, 10 & 12 in. $6.33 ⅌ 100 ℔ / "Providence" } over 12 in. $5.00 ⅌ 100 ℔ } dis 10 %
Screw Hook and Strap } 8, 10, 12 in., $6.60 ⅌ 100 ℔ / 14 to 36 in., $5.25 ⅌ 100 ℔ } dis 10 %
Heavy Welded Hook } 8 to 12 in., $6.60 ⅌ 100 ℔ / 14 in. & up, 5.25 ⅌ 100 ℔ } dis 10 %
Screw Hook and Eye ..... ⅝ & 1 in., 9c / ¾ in., 9c / ⅝ in., 10c / ½ in., 12c } dis 20 %
Wrought Strap and T. list Dec. 20, '77 ..... dis 50&10&10 %

Hoes.—Riveted Shank ..... per doz, $5.00; dis 35 %
Socket ..... ⅌ doz $5.25, dis 35 %
Grub ..... dis 15 %
Planters' ..... dis 35 %
Scovill Pattern ..... dis 20&10 %
Scovill Pattern, Handled ..... dis 25 %
Hick's Pat. Solid C. S. Planters' ..... dis 20&10 @ 30 %
" " " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters ..... dis 25 %
" " Scovill Pattern ..... dis 20@25 %
Magic ..... per doz, $5; net

Hooks.
Bird Cage, Sargent's list ..... dis 60&10 %
" Reading ..... dis 40&10 %
Cotton ..... per doz. $4, dis 50 %
Cotton, Patented (N. Y. Mallet & Handle Wks), dis 35 %
Cotton (Humason & Beckley Mfg. Co.) ..... dis 40 %
Belt ..... dis 60&10 %
Bench—Hotchkiss', $5.00 ⅌ doz ..... dis 10 %
" Weston's, No. 1, $10.00; No. 2, $9.00 ⅌ doz dis 25 %
" McGill's, $3.00 ⅌ doz ..... dis 15 %
Clothes Line Sargent's list ..... dis 66⅔&10 %
" " Reading list ..... dis 40&10 %
Ceiling.. } Sargent's list ..... dis 60&10 %
Harness } Reading list ..... dis 40&10 %
Coat and Hat, Sargent's list ..... dis 60&10&10 %
" " Reading ..... dis 40&10&10 %
Picture Hooks, Brown's Pat. Solid Brass, $4 per gross ..... dis 25 %
Tassel (T. & S. Mfg. Co.) ..... dis 40 %
Wrought Staples and Hooks and Staples ..... dis 70&10 %
" Staples, Stanley's list ..... dis 65&10 %
Wire Screw Hooks and Eyes ..... dis 65&10 %
Grass and Bush ..... dis 40@45 %
Whiffletree—Patent ..... dis 40 %
Hooks and Eyes—Malleable Iron ..... dis 65&10 %
" Brass ..... dis 65&10 %

Horse Nails

	Nos. 5	6	7	8	9	10	
Ausable, ⅌ ℔	31c	28c	26c	25c	24c	23c	dis 30 %
Clinton, "		23c	21c	20c	19c	18c	dis 30 %
Essex, "	31c	28c	26c	25c	24c	23c	dis 30 %
Putnam, "	31c	28c	26c	25c	24c	23c	dis 10&10 %
National, "	25c	23c	21c	20c	19c	18c	dis 20&10 %
Vulcan, "	28c	25c	23c	22c	21c	20c	dis 10 %
Globe, "	28c	25c	23c	22c	21c	20c	dis 10 %
A. C., "	27c	25c	23c	22c	21c	21c	dis 20 %
Ch'mpl'in Forged "	28c	25c	23c	22c	21c	20c	dis 10 %

Horse Shoes.—Burden ..... ⅌ keg $4.37
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy ..... ⅌ keg 4.37½
Mule Shoes ..... ⅌ keg 5.37½

Ice Awls, Chisels, &c.
American Ice Chisel ..... ⅌ doz. $3.50 net
National ..... ⅌ doz $2.25 dis 20 %
Novelty Ice Breakers ..... ⅌ doz $6.25 dis 20 %
White's Sliding Head Picks ..... ⅌ doz $2.50 dis 40 %
Dunlap's King Picks ..... ⅌ doz $3.00, dis 40&10 %
Wood Head Picks, Sargent's ..... ⅌ doz $1.60, dis 40&10 %
Iron " ..... ⅌ doz 1.25, dis 40&10 %
Ice Mallets Pick in Head ..... ⅌ doz 1.75 net
" Pick in Handle ..... ⅌ doz 3.00 net
Ice Axes, Small, Cast or Malleable.. ⅌ doz 1.20 dis 10 %
Kitchen Ice Tongs ..... ⅌ doz 2.25 net
Combination Ice Tools ..... ⅌ doz $200 net

Kettles.
Brass, 7 to 13 inches inclusive ..... ⅌ ℔ 32c net
Brass larger than 13 inches ..... ⅌ ℔ 35c net
Enameled ..... dis 45 %

Knives.
Ames' Butcher Knives ..... dis 20 %
" Shoe " ..... dis 15 %
" Bread " ..... ⅌ doz $1.50, dis 15 %
Moran's Shoe and Bread Knives ..... dis 20 %
Hay and Straw— Wadsworth's ..... dis 33⅓ %
Table and Pocket ..... See Cutlery

Knobs.
Carriage (Jap'd 80c. ⅌ gross) ..... dis 60 &10 %
Base—Common ..... dis 30&10 %
Hemacite Door Knobs ..... New list, dis 35&5 %
Door, Mineral / " Por Jap'd / " " Plated / " " Por } Same discounts as Door Locks.
Furniture, Plain ..... 790 gross inch, dis 10 %
" Wood Screws ..... dis 10 %
Picture (T. & S. Mfg. Co.) ..... dis 50&10 %
" Sargent's ..... dis 60&10 %
Hemacite Picture ..... dis 35 %
Shutter, Porcelain ..... dis 40&10 %

Ladles.
Melting—Sargent's ..... dis 50&10 %
" Reading ..... dis 30&10 %
" Monroe's Patent ..... ⅌ doz $4.00, dis 40 %
" P. S. & W ..... dis 30&10 %

Lanterns.
Tubular ..... No. 0, $8.65; No. 1, $10.15 / With Guards 35c extra. } net
Nail City ..... No. 1, per doz., $10; No. 2, $9, net
Meteor ..... No. 1, per doz., $9.50; No. 2, $8.50, net
Hurricane No. 2 ..... ⅌ doz $5.75 net
Peerless ..... No. 5, ⅌ doz $11.75, dis 10&10 %
Brady's Patent ..... dis 10&10 %
Ætna ..... dis 10&10 %
Yankee ..... dis 10&10 %

De Beque ..... dis 10&10 %
Police..Small, $6 25; Med., $7.50; Large, $12.00, dis 10 %
Convex Reflector ..... $2.75 ⅌ doz, dis 10 %

Lawn Mowers.
Pennsylvania, Philadelphia and Excelsior, new list ..... dis 30 %

Lemon Squeezers.
Porcelain Lined ..... ⅌ doz $6.00—dis 30 %
Wood ..... ⅌ doz $3.00—dis 30 %
Eureka, Tinned ..... ⅌ doz $8.00—dis 10 %
Dunlap's Improved ..... ⅌ doz $4.00 net
Sammis' ..... No. 1, $7.00; No. 2, $12.00 ⅌ doz; dis 45 %
Townsend's Patent ..... $6.00 ⅌ doz., dis 33⅓ %

Lines.—Linen Fish ..... dis 25&10 %
Cotton Chalk ..... dis 55 %
Sil. Lake Chalk .... Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50 ..... dis 25 %
Mason's Linen ..... dis 25&10 %
Wire Clothes, Galvanized ..... each 25 @ 40c net

Locks and Latches.
Cabinet Eagle / " Gaylord / " Bridgeport } Changes made in list price of some numbers Jan. 1, 1881, dis 25&2 %
" P. & F. Corbin ..... dis 60 %
" A. E. Deitz ..... dis 30@4
Trunk, new list, Jan. 1, 1881 ..... dis 15&2 %
Langstroth & Crane's List Jan. 1 '77.
Round Key, No. 1 to 5 ..... dis 40&10 %
" No. 1½ to 12 ..... dis 40& 10 %
Flat Key ..... dis 33⅓&10 %
A. E. Deitz, Flat Key ..... dis 30@ %
Yale Lock Co., Flat Key ..... dis 40 %
"Shepardson" or "U. S." ..... dis 35 %
"Fetter" or "American" ..... dis 33⅓ %
Plate ..... dis 33⅓&2 %
F. Many's "Extension Cylinder" ..... $10.50 ⅌ doz, net

DOOR LOCKS, &C
Branford / Norwalk / Norwich / P. & F. Corbin / Russell & Erwin / Mallory, Wheeler & Co / Reading Hardware Co / Trenton Lock Co } List of June 10, with changes of Dec. 1, 1880, and April 19, 1881, dis 45&2 %
Padlocks—Russell & Erwin / " Mallory, Wheeler & Co / " Wm. Wilcox & Co } ..... dis 40 % and 2 % for cash
" Yale Lock Mfg. Co.'s "Standard" ..... dis 40 %
" Romer's ..... dis 30 %
" Conestoga ..... dis 60 %
" J. H. McWilliams ..... dis 10 %
" A. E. Dietz ..... dis 35 %

Lustro.—4-oz. bottles, per doz, $2; per gro, $18; net

Mallets.—Hickory ..... dis 10&10 %
" Lignumvitae ..... dis 10&10 %
Penfield Block Co., Lig., Apple & Hickory ..... dis 30 %

Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 3 4 ⅌ doz..$14.00 17.00 19.00 30.00—dis 30 %
Miles' Challenge ..... Nos. 1 2 3 ⅌ doz..$22.00 30.00 40.00—dis 35 %
Perry's Nos. 1 2 3 4 4 g'rd 5 g'rd Each..$3.00 4.00 5.00 11.00 13.00 36.00—dis 30 %
Woodruff's (P. S. & W.) ..... Nos. 100 150 ⅌ doz $15.00 18.00 dis 30 %
Hales' ..... Nos. 11 12 13 ⅌ doz..$27.00 33.00 45.00..dis
Draw Cut ..... Nos 5 2 6 8 10 Each..$50.00 75.00 80.00 225.00 400.00—dis 20
American ..... dis 25 %
Nos ..... 1 2 3 4 B 5 Each $5.00 7.00 10.00 25.00 50.00 60.00
Kieser's No. 55 ..... $40 per doz., dis 40
" Gem ..... $25 per doz., dis 40
Silver & Deming ..... dis 25
Pennsylvania ..... dis 40&10 %
Nos ..... 1 2 3 00 ⅌ doz $24.00 28.00 36.00 28.00
Beef Shavers (Enterprise Mfg. Co.) ..... dis 30 %

Mincing Knives.
Am., (2d quality) per gross, 1 blade, $7; 2 blades, $12; 3 blades, $18 ..... net
Lathrop's ..... dis 15&10 %
Smith's..per doz, Single, $1.35; Double, $1.80; dis 10 %
Cowles Hdw. Co ..... dis 40&10

Molasses Gates.
Stebbins Pattern ..... dis 80 %
" Genuine ..... dis 75&10 %
" Tinned Ends ..... dis 40&10 %
Chase's Hard Metal ..... dis 60&10 %
Bush's ..... dis 20 %
Lincoln's Pattern ..... dis 50&10 %
Weed's ..... dis 15 %
Boss, No. 1 2 3 4 $7.00 $8.00 $9.00 $10.00 per doz
" Japanned Finish ..... dis 60&10
" Bronze " ..... dis 50&10

Nails ..... See Trade Report

Nuts and Washers.—(In lots less than 100 lbs. add ½c to list.)
Square Nuts ..... 7½c off list
Hexagon Nuts ..... 7½c off list
Washers ..... 7c off list

Nut Crackers
Table (Humason & Beckley Mfg. Co.) ..... dis 33⅓ %
Blake's Pattern ..... ⅌ doz $2.50, dis 10 %
Turner & Seymour Mfg. Co ..... dis 50 %

Oakum.
Best ..... ⅌ ℔ 11c
U. S. Navy ..... ⅌ ℔ 10c
Navy ..... ⅌ ℔ 8½c

Oilers.—Zinc and Tin ..... dis 60 %
Brass and Copper ..... dis 50 %
Malleable (Hammer's) ..... ⅌ doz $5.00, dis 10 %
Prior's Patent or "Paragon Zinc ..... dis 60 %
" " Brass ..... dis 50 %
Olmstead's, Tin and Zinc ..... dis 60 %
" Brass and Copper ..... dis 50 %
Broughton's, Zinc ..... dis 60 %
" Brass ..... dis 50 %

Ox Balls ..... dis 50&10

Pencils.
Faber's Carpenters' ..... High list, dis 40&10 %
" Round Gilt ..... ⅌ gross $5.25 net
Dixon's Lead ..... ⅌ gross 4.50 net
" Lumber ..... ⅌ gross
Dixon's Carpenters' ..... dis 40 & 10 %

Packing, Steam.
N. Y. Belting and Packing Co ..... dis 20

Picture Nails.
Brass Head, Sargent's List ..... dis 50&10 %
" T. & S. Mfg. Co ..... dis 40 %
Porcelain Head, Sargent's List ..... dis 50&10 %
" " Judd's List ..... dis 30 %
Porcelain Head, T. & S. Mfg. Co ..... dis 33⅓ %
Niles' Patent ..... dis 25 %

Picks and Mattocks ..... dis 35

Pinking Irons ..... ⅌ doz 75c, net

Plaiting Machines.
Magic ..... ⅌ doz $10.00, net
Astor Plaiting Machine ..... each $15.00, dis 20 %
Crown Plaiting Machines ..... dis 25 %
6in.. $6.00. 10in..$8.00 each

Planes and Plane Irons.
Bench, First Quality ..... dis 30&5 %
" Second " ..... dis 40 %
Moulding ..... dis 25&5 %
Bailey's (Stanley R. & L. Co.) new list Jan. '79 dis 20&10 %
The Stanley (S. R. & L. Co.) " " dis 20&10 %
Bailey's "Victor" ..... dis 20&10 %
Defiance Adjustable ..... dis 20&10 %
Laflin Mfg. Co ..... dis 35 %
Plane Irons, Butcher's ..... $5.50 to £
" Buck Bros ..... $5.00 to £
" Auburn Tool Co.'s ..... dis 20 %
" The Globe Mfg. Co. "Baldwin Iron" ..... dis 20 %
" Ohio Tool Co ..... dis 20 %
" Sandusky Tool Co ..... dis 20

Pliers and Nippers.
Button's Patent ..... dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers No. 2; 5 in. $20; No. 4, 7 in., $30 ⅌ doz ..... dis 15 %
Humason & Beckley Mfg. Co ..... dis 33⅓ %
Gas Pliers ..... dis 50 %
Eureka Pliers and Nippers ..... dis 25 %
Russell's Parallel ..... dis 25 %
P. S. & W. Cast Steel ..... dis 35 %
" Tinners' Cutting Nippers ..... dis 15 %

Plumbs and Levels.
Disston's ..... dis 40 %
Stanley R. & L. Co.'s Pat. Adjustable ..... dis 65&10 %
" " " Non-Adjustable ..... dis 65&10 %
Chapin's Patent Adjustable ..... dis 65&10 %
" Non-Adjustable ..... dis 65&10 %
Standard Rule Co.'s New Adjustable ..... dis 65&10 %
" " Non-Adjustable ..... dis 65&10 %
Johnson's Patent Adjustable ..... dis 65&10 %
Pocket Levels ..... dis 65&10 %
Davis' Inclinometers ..... dis 20 %

Post Hole and Tree Augers.
Samson Post Hole Digger ..... per doz $37.50, dis 20 %
Fletcher Post Hole Augers ..... ⅌ doz 30.00, dis 20 %
Vaughan's Post Hole— 6 in. $23.60; 7, 8 and 9 in. $25 per doz ..... dis 15&10 %
Eureka Diggers ⅌ doz. $40.00 ..... dis 25&10 %

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw per doz $19.00, dis 20 %
" Pruning Hook ..... " 12.50, dis 20 %
E. S Lee & Co.'s Pruner ..... dis 30 %
Pruning Shears ..... ⅌ doz $5.50@$6.00

Pulleys.
Hot House and Tackle ..... dis 60&10 %
Jap'd Screw ..... dis 60&10 %
Brass Screw ..... dis 60&10 %
Jap'd Side ..... dis 65&10 %
" Clothes Line ..... dis 60&10 %
Hay Fork Solid Eye, ... $4.50; Swivel, $5.00, dis 50&10 %
" " "Anti-Friction." ..... $7.50 dis 40&5 %
" " "F" Common and Pat. Bushed ..... dis 20 %
" " Tarbox Pat. Iron ..... dis 20 %
Shade Rack ..... dis 50 %

Punches.
Belt or Drive ..... ⅌ doz $2.00; 2.25; 2.50, dis 50 %
Bemis & Call Co.'s Cast Steel Drive ..... dis 50&5 %
" " Springfield Socket ..... dis 50&5 %
Spring ..... ⅌ doz $7.00, dis 50& 5 %
" Leach's Patent ..... dis 15 %
Bemis & Call Co.'s Spring and Check ..... dis 40 %
Solid, Tinners' ..... ⅌ doz $1.44, dis 40 %

Rail.
Sliding Door Wrought Brass.....₱ lb 45c dis 30 %
" Iron, Painted .₱ foot 4c. dis 10&10 %
Barn Door....inch..... ½ ⅝ ¾
Per 100 feet. $2.00 3.00 4.00—dis 10 %
" for N. E. Hangers—
Small. Med. Large.
Per 100 feet. .. ..$2.10 2.70 3.30—net

Razors.
J. R. Torrey Razor Co.....dis 15 %

Razor Strops.
Genuine Emerson.....dis 55 %
Badger's Emerson.....dis 40 %
Badger's (not Emerson).....dis 30 %
Evans'.....dis 40 %
Imitation Emerson.....₱ doz $3.00, dis 20 %
Hunt's.....dis 40&c %
Chapman.....dis 15 @ 20 %
Saunder's.....dis 10 %
Torrey's.....dis "

Rivets.
Iron and Tinned.....dis 60 %
In bulk, list of May 21.....dis 45 %
Copper Rivets and Burs.....dis 33⅓ %
Nos.. 7 8 9 10 11 12 13 14 15 &c %
₱ lb..40c 50c 52c 54c 56c 58c 60c 65c 70c&c %
Burr's.....dis 45 %

Rivet Sets.....

Rods.
Stair, Brass.....dis 20 %
Stair, Black Walnut.....dis 35 %
Stair, American Patent.....dis 20 %

Rollers
Barn Door, Sargent's list.....dis 60&10&10 %
Acme (Anti-Friction).....dis 50 %

Rope.—Mnfs' Net List, May 21, 1881. dis on 5000 lbs and over, 1¼c ₱ lb
Manila.....½ inch and larger ₱ lb 15 "
" .....⅝ inch ₱ lb 15¼c
" .....¾ and 7-16 inch ₱ lb 16 "
" Tar'd Rope.....₱ lb 14½c
" " Lath Yarn.....₱ lb 15 "
" Hay Rope.....₱ lb 11 "
Sisal.....½ inch and larger ₱ lb 10½c
" .....⅝ inch ₱ lb 11 "
" .....¾ and 7-16 inch ₱ lb 11½c
" Hay Rope.....₱ lb 10½c

Rules.	Boxwood.	Ivory.
Chapin's, Standard, Stanley	dis 70&10 %	dis 60&10 %

Sad Irons.
From 4 to 10 lbs.....₱ lb 35c net
Self Heating.....₱ doz $9.00 net
" Tailors'.....₱ doz $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Mrs. Pott's Irons, Double Pointed.....dis 40 %
Mrs. Pott's Irons, Square Back.....dis 40&10 %
Enterprise Star Irons.....dis 40&10 %
Combined Fluter and Sad Iron..per doz $15.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.75 ₱ ream
" " " 2, 2½ & 3. 4.25 ₱ ream
" " " Assorted 4.75 ₱ ream
" " Star..... 3.75 ₱ ream
" " Emery..₱ ream $6.50 @ 11.50
Bartles Flint, same list as B & A.....dis. 25%
" Harrison, $3.75 per ream.....dis 25%
New England, same list as B. & A. Flint.....dis 25 %
Gage's.....dis 20&5 %
dis 30 %

Sash Cord.
Common.....₱ lb 14 @ 20c net
Patent.....₱ lb 19c net
Silver Lake Russia Flax.....₱ lb 65c, dis 10 %
White Cotton.....₱ lb 60c, dis 10 %
Drab Cotton.....₱ lb 55c, dis 10 %
Raw Hide.....dis 25 %
Steel Ribbon.....dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross.....dis 33⅓%
Ferguson's.....dis 33⅓ %
Walker's.....net
Hammond's Window Springs.....dis 25 %
Northup Window Springs, No. 1, $10.00; ₱ gross..dis 15 %
The Perfect, Clark & Smith, Plain Jap'd ₱ gro $10.00 net
" " Pol. Knob Jap'd. ₱ gro 14.00 net
" " Nickel-Plated...₱ gro 27.00 net
"Universal".....dis 30 %

Sash Weights.—Solid Eyes, in 500 lb lots and over.....₱ ₵ 1¾c net

Sausage Stuffers or Fillers.
Miles.....₱ doz $20 dis 30 %
Perry.....₱ doz, No. 15; No. 0, $21, dis 30 %
Fraw Cut No. 4.....each $30.00, dis 20 %
Enterprise Mfg. Co.....dis 30 %
Silver's.....dis 25%

Saws.
Disston's Circular.....dis 40 %
" Mill.....dis 40 %
" Cross Cut.....dis 40 %
" Hand, Panel, Rip, &c.....dis 20 %
Boynton's Lightning, Cross Cuts, new list.....dis 20 %
" One-Man, all lengths, " .....dis 20 %
" Billet Webs, 30 in. " .....dis 25 %
" Lightning Buck Saws X Far.....dis 25 %
" Lightning Hand, Panel and Rip.....dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand.....dis 20 %
W. M. & C. Mfg. Co. Cross-Cuts, except Monarch, dis 20 %
Livingston's Butcher and Kitchen.....dis 20 %
Framed Wood—

Nos....	101	102	103	104	105
Per doz..	$10.00	8.50	10.00	7.40	6.3c net

Saw Frames.
White, Vermont.....₱ doz $1.35, dis 25 %
Red, Polished and Varnished.....₱ doz $2.00, dis 10 %
Saw Rods.....$10 list dis, 10&5 %

Saw Sets.
Boynton's Patent X Cut, per doz. $12.00; Hand Saw, per doz., $10.00.....dis 20 %
Stillman's Genuine.....₱ doz $3.50 and $4.50 dis 10 %
" Imitation.....₱ do $3.25. dis 10&10 %
Common Lever.....per doz $2.00, dis 30&10 %
Leach's.....No. 0, $8.00; No. 1, $15.00. dis 15 %
Nash's.....No. 1 $6.50; No. 2, $5.50. dis 20&10 %
Hammer, Hotchkiss.....$5.50, dis 10 %
" Bemis & Call Co.'s New Pat.....dis 40&c %
Bemis & Call Co.'s Lever & Spring Hammer..dis 30&5 %
" " Plate.....dis 10 %
" " Cross Cut.....dis 12½ %
Aiken's Genuine.....$13.00. dis 50&10 %
" Imitation.....$7 00. dis 50 %
Hart's Patent Lever.....dis 20 %
Disston's.....dis 20 %
Morrill's.....No. 1, $15; No. 2, $51, dis. 35&10 %

Scales.
Hatch, Counter, No. 171.....₱ doz $36, dis 35&10 %
" Tea, No. 181.....$6 00. dis 45 %
Union Platform.....dis 20 %
Fairbanks'.....dis20&c %
Buffalo Scale Co.....dis 20&c %
Howe's.....dis 40 %
Chatillon's Grocers'.....dis 25 %
" Eureka.....dis 50 %
Family Universal.....dis 40 %
" Favorite.....dis 40 %
" Turnbull's.....dis 20 %
Scale Beams, Chatillon's list.....dis 25 %
" Sargent's list.....dis 50&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.00. dis 20&10 %
Box, 1 Handle.....₱ doz $4.00, dis 10 %
" 2 " .....₱ doz 6.00 dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 55 %
Ship (common).....per doz $3.00 net
" (Providence Tool Co.....dis 10%

Screw Drivers.
Douglass Mfg. Co.....dis 20&10&10 %
Disston's.....dis 40 %
Disston's Patent Excelsior.....dis 40 %
Buck Bros.....dis 25 %
Stanley Rule & Level Co., Varnished Hdls..dis 50&10 %
" " Black Handles...dis 40&10 %
Sargent & Co.'s.....dis 50&10 %
Gay's Double Action Ratchet per doz., 4 in., $9.00; 5 in., $10.20; 6 in., $12.00 dis 30 %
Cowles Hdw. Co., No. 1 Extra.....dis 40&10 %
" " No. 1.....dis 50&10 %
" " Nos. 4 and 00.....dis 30 %
Clark's Patent.....dis 25 %

Screws.
Flat H'd Iron.....New list April 27, 1881.....dis 40 %
Round Head Iron. " " .....dis 35 %
Flat Head Brass... " .....dis 40 %
Round Head Brass.....dis 30 %
Brass and Silver Capped.....dis 40 %
Japanned, list of Plain Screws.....dis 25&10 %
Coach Patent Gimlet Point, List per 100.....dis 60 %
Coach, Common.....dis 60 %
Bed.....dis 10 %
Machine, Flat Head, Iron.....dis55 %
" Round Head, Iron. " .....dis 50 %
Bench, Iron.....dis 50&10 %
" Wood, Beech.....₱ doz $3.00, dis 10 %
" " Hickory.....dis 20&10 %
Hand.....dis 25&10 %
Hand Rail, Sargent's.....dis 66⅔&10 %
" " Humason, Beckley & Co's.....dis 40 %
" " Am. Screw Co., list of Jan. 1, '81.dis 50&10 %
Jack (Wilson's).....dis 20 %

Screw Window Balances.
R. B. Huguniu's.....$35.00 per gross, dis 25&5 %

Scroll Saws.
Lester, $10.00.....dis 20 %
Rogers, $3.50.....dis 25 %

Shears and Scissors.
American (Cast) Iron.....dis 70&10 %
Clipper Cast Iron.....dis 70&10
Pruning.....see Pruning Hooks and Shears.
Barnard's Lamp Trimmers.....₱ doz $5.75
Tinners'.....dis 15 %
Seymour's, List, Nov. 25, 1879.....dis 60&10 %
Heinsch's.....dis 50 %
" Tailors' Shears.....dis 33⅓ %
Mass. Cutlery Co. St. Trimmers.....dis 75 %

Sheaves.
Sliding Door, M. W. & Co., list.....dis 45&2 %
" R. & E. list.....dis 60&10&2 %
" Patent Roller.....dis 10 %
" " Hatfield's....dis 65&10&2 %
" Russell's Anti-Friction....dis 65&10&2 %
" Moore's Anti-Friction.....dis 45 %
Sliding Shutter, R. & E. list.....dis 60&10&2 %
" " Sargent's list.....dis 65&10 %
" " Reading list.....dis 55&10 %
Moore's Anti-Friction (Hanging).....dis 45 %

Shovels and Spades.
Ames. New list, July 1, 1881.....dis 15 %
Griffiths.....dis 40&10 %
Old Colony.....dis 15%
Payne Pettebone & Son, new list.....dis 40&10 %
" " R. R. Shovels.....dis 15 %
Remington's (Lowman's Patent).....dis 30 %
Rowland's.....dis 40&10 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list.....dis 50&10&5 %
Polished Steel.....new list. dis 50&10&2 %

Slates.
Square Frames.....by case.....dis 70 %
Less than a case.....dis 60&10 %

Spoke Shaves.
Defiance Metallic.....dis 20&10 %
Iron.....dis 45 %
Wood.....dis 30&10 %
Bailey's (Stanley R & L. Co.) new list.....dis 30&10 %
Stearns'.....dis 30&10 %

Spoke Trimmers.
Bonney's.....₱ doz $10.00 dis 40&5 %
Stearn's.....₱ doz $9.00 dis 20&10 %
Ives'.....No. 1, $15.00; No. 2, $12.00 ₱ doz, dis 50&10 %
Douglass'.....₱ doz $9.00, dis 15 %

Spoons.
Basting.....dis 55 %
Riveted Table and Tea.....dis 55 %
Solid Table and Tea.....dis 55 %
Britannia.....dis 65 %
The Wm. Rogers Mfg. Co.....dis 40&5&5 %
Reed & Barton.....dis 40&5&5 %
Hall & Elton.....dis 40&5&5 %
Holmes, Booth & Haydens.....dis 40&5&5 %
German Silver.....dis 30&10&5 %
Cast Steel, Sil. Plated.....dis 33⅓ %
Tin (P. S. & W.), Teas.....$1.25 ₱ gross, net
" " Tables.....$2.00 ₱ gross, net
Tin Cowles Hdw. Co.).....dis 10 %
" " case lots.....dis 20 %

Stocks and Dies.
"Lightning" Screw Plate.....dis 10 %

Stone.
Hindostan No. 1, 0 0; Axe, 8c.....dis 20&10 %
Hindostan Hacker Stone.....₱ gross $12.00 dis 10 %
Sand Stone.....₱ lb 0c dis 33⅓&10 %
Washita Stone.....No 1. ₱ lb 20c net
" " No. 2. ₱ lb 16½c net
" " Slips.....No. 1. ₱ lb 40c net
Arkansas Stone No. 1, 4 to 6 in.....₱ lb $1.35 net.
" " No 1, 6 to 9 in.....₱ lb $2.00 net
Turkey Oil Stone (Chase).....4 to 8in, $1.00 ₱ lb,
" Slips " .....$2.50 ₱ lb dis 10 %
Lake Superior (Chase).....₱ lb 20c, dis 10&5 %
" " Slips " .....₱ lb 45c, dis 10&5 %
Grindstones. Family, Loring's.....dis 10 %

Stove Polish.
Joseph Dixon's.....₱ gross $6.00 dis 10 %
Gem.....₱ gross $4.50, dis 10 %
Gold Medal.....₱ gross $6.00, dis 25 %
"Mirror".....₱ gross $6.00, dis 5 %
Ruby.....₱ gross $3.75, net
Rising Sun.....₱ gross $5.75, net
Dixon's Plumbago.....₱ lb 8c. net

Squares.
Steel.....dis 50 %; full cases, dis 50&10 %
Iron.....dis 50 %; full cases, dis 50&10 %
Nickel Plated.....add $2.50 @ $4.00 ₱ doz. net
Try Squares and T Bevels.....dis 50&10
Disston's Try Square and T Bevels.....dis 40 %
Winterbottom's Try and Mitre.....dis 20&10 %

Tacks, Brads, &c.
List of April 2, 1880

Tinned Swedes Tacks	dis 45 %
Tinned American "	dis 55 %
Swedes Tacks, all kinds	dis 30 %
Copper Tacks and Nails	dis 30 %
Swedes Hungarian Nails	dis 30 %
American "	dis 30 %
Gimp and Lace Tacks	dis 30 %
Finishing Nails	dis 25 %
Trunk and Clout Nails	dis 25 %
Common and Patent Brads	dis 25 %
Basket Nails	dis 25 %
Brush Tacks	dis 20 %
Leathered Carpet Tacks	dis 20 %
American Cut Tacks	dis 25 %
Cigar Box Nails	dis 25 %
Chair Nails	dis 25 %
Double-Pointed Tacks	dis 50&5 %

Extra 10 % on all.

Tap Borer
Common and Ring.....dis 15 %
Ives' Tap Borers.....dis 15&10 %
Enterprise Mfg. Co.....dis 30 %

Tapes. Measuring.
American.....dis 20 %
Spring Tapes.....dis 25&10 %

Thermometers.
Tin Case.....dis 70 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion).....dis 50 %
Wood Bottom.....₱ doz $12.00, dis 40&5 %
All Iron.....₱ doz $9.50, dis 40&5 %
Nashua Lock Co.'s.....₱ doz $18 00, dis 5&5&5 %
Wilson's.....dis 35 %

Toe Calks.—Winsted.....₱ lb 9c. dis 5

Tinners' Tools and Machines.
Machines (P. S. & W.).....list add 20 %
Tools (P. S. & W.).....add 6 %

Transom Lifters.
Wollensak's Patent.....dis35 %
Richer's Patent.....dis 20&10&10 %

Traps.
Game, Newhouse.....dis 40 %
" Oneida Pattern.....dis 50 @ 55 %
" Blake's Patent.....dis 40 %
Mouse, Wood, Choker.....₱ doz holes, 10½c
" Round Wire.....₱ doz $1.50, dis 10 %
" Cage " .....₱ doz $2.50. dis 10 %
" Catch-em-alive.....₱ doz $2.50, dis 10 %
Rat, "Decoy".....per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering.....dis 25 %
Reed's Brick and Plastering.....dis 15 %
Disston's Brick and Plastering.....dis 20 %
Peace's Plastering.....dis 30 %
Clement & Maynard's.....dis 20 %
Rose's Brick.....dis 15 %
Brades' Brick.....dis 20 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis55&10 %

Triers.
Butter and Cheese.....dis 25%

Vises.
Solid Box.....List of July 1, '79 dis 30 %
" "Crown" (A. H. Hildick) 40 to 100 lb, 15c net
" Peter Wrights.....15½c
" Wilkinson's.....13½c
Parallel, Parker's.....dis 10 %
" Wilson's.....dis 45 %
" Howard's.....dis 20&10 %
" Merrill's.....dis 15 %
" Sargent's.....dis 50&10 %
" Trenton.....dis 30 %
" Backus and Union.....dis 40 %
" Oval Slide.....dis 40 %
" Double Screw Leg.....dis 15&10 %
" Prentiss.....dis 25 %
" Simpson's Adjustable.....dis 25 %
"Family." List.....net

Saw Filers, Bonney's.....₱ doz $24.00, dis 20&10%
" Stearn's.....dis 20&10 %
" Hopkins'.....₱ doz $17.50 dis 10 %
Reading.....dis 40&10 %
Lowell Hand Vises.....dis 20 %
Richardson's Vise and Anvil.....dis 25 %

Washer Cutters.
Smith's Patent.....₱ doz $12.00 dis 25 %
Johnson's.....₱ doz $12.00. dis 33⅓ %
Penny's.....₱ doz $14.00 and $16.00. dis 40 %
Appleton's.....₱ doz $16.00, dis 60&10 %

Washers.—See Nuts and Washers.

Well Wheels.—Revised list.....dis 60&10%

Wire.
Brass and Copper.. List of June 10, 1880.....dis 30 %
Bright and Annealed.....Nos. 0 @ 10. dis 55 %
" " .....Nos. 19 @ 20. dis 60 %
" " .....Nos. 27 @ 30.dis 65 %
Coppered.....Nos. 0 @ 18.dis 50 %
Galvanized, Nos. 0 to 6.....₱ lb 10c. dis 40 %
" Nos. 7 to 18.....market list. dis 45 %
Tinned, Nos. 0 to 18.....dis 45 %
Cast Steel.....dis 30
Tinned Broom Wire, Nos. 18 to 25.....dis 50 %
Annealed Fence, Nos. 8 and 9.....dis 55 %
" Grade, Nos. 10 to 14.....dis 55 %
Galvanized Telegraph, Nos. 7 to 9.....₱ lb 9c
" " Nos. 10 and 11.....₱ lb 10c
" " No. 12.....₱ lb 10 ½ c
Fence Staples.....₱ lb 7½ @ 7¾c
" Staples, Galvanized.....₱ lb 6¼ @ 6½c
Stubs Steel Wire.....$7.00 to 0
Japanned Barb Fence.....₱ lb 9c
Galvanized.....₱ lb 10c
Steel Music Wire, Nos. 12 to 27.....₱ lb $1.25, net
Turner & Seymour Mfg. Co., Picture Wire..dis 30&20 %
Judd's Picture Wire.....dis 30&20 %
Clothes Line Wire, Galvanized.....₱ coil 25@40c net
Wire Cloth, green and drab.....₱ sq. ft, 3 c net

Wrenches.
American Adjustable.....dis 40 %
Baxter's Adjustable "S," 1st Jan., 1880. dis 20&5 %
" Diagonal.....dis 20&5 %
Coes 'Genuine.....dis 50 %
" "Mechanics".....dis 50&10 %
" Pattern, Malleable.....dis 75 %
" " Wrought.....dis 67 %
Girard Standard.....dis 60 %
Girard Agl.....70&5 %
Bemis & Call's Patent Combination.....dis 25 %
" " Merrick's Pattern.....dis 35 %
" " Briggs' Pattern.....dis 25 %
" " Cylinder or Gas Pipe.....dis 40 %
Van Wagoner & Williams' Basin.....per doz $4.50
Aiken Pocket (Bright).....$5.00. dis 60&10 %
The Favorite Pocket (bright).....per doz $3, dis 60 %
Webster's Pat. Combination.....dis 25 %

Wringers. Per doz

Universal, XX	No. 2½	$6 00
" "	No. 2	63.00
" "	No. 1½	71.00
" "	No. 1	93.00
" "	No. 8	each, 12 00
" "	No. 12	" 20.00
" "	No. 18	" 25.00
" "	No. 22	" 32.00
Peerless,	No. 0, no Cogs	51.00
"	No. 1, "	54.00
"	No. 2½, with Cogs	60.00
"	No. 2, "	64.00
"	No. 3, "	71.00
"	No. 4, "	89.00
Unique,	No. 0	51.00
"	No. 1	54.00

dis 25 %

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WOLFF, KAHN & CO.,

MANUFACTURERS OF

Steel Wire

For All Purposes.

Special Finest CAST STEEL WIRE,

MARKET STEEL WIRE, PRIME COPPERED SPRING WIRE, TEMPERED AND UNTEMPERED STEEL WIRES, IN LONG LENGTHS, FOR CRINOLINE, CORSET, LOCK AND BRUSH MAKERS, AND ALL SPECIAL PURPOSES.

ALL KINDS OF FURNITURE SPRINGS.

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OF EVERY DESCRIPTION.

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Manufacturers of

CRESCENT STEEL,

In Bars, Sheets, Cold-Rolled Strips, &c.

Polished, Compressed Drill Rods and Wire,

Warranted equal to any imported in *quality, finish and accuracy.*

Also Common Grades.

Established 1810.

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For Drills, Cold Chisels, Tools, Taps, Dies, &c.

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WIRE OF ALL KINDS,

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Best Warranted Cast Steel for Machinists' Tools,

Taps, Dies, Punches, Shear Blades, Chipping Chisels and Granite Rock Drills,

Extra Mild Center Steel, special for Taps,

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MACHINERY AND CAST SPRING STEEL, HEAVY AND LIGHT FORGINGS.

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STEEL Gautier Steel.

See Page 3.

Steel.

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BENJAMIN ATHA & CO.,

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BEST REFINED CAST STEEL

And grades of Steel specially adapted for Lathe Tools, Chisels and Taps and Dies.

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Manufacturers of Every Kind of Steel Wire.

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Steel Rails,	Steel Ship Plates.
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Particular attention is paid to quality and temper for FILES, SAWS, EDGE TOOLS, TABLE and POCKET CUTLERY, TOOLS, TAPS and DIES; also for COLD ROLLED STEEL for CLOCK SPRINGS, CORSET CLASPS, &c.

A Large Assorted Stock of JOHN ROTHERY'S FILES always on hand.

Warranted Superior to any Steel in the Market, either English or American, for every purpose.

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Combination Chrome Steel and Iron for Safes, Jails and Deposit Vaults.

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The Company Warrant its Rails equal in quality to any manufactured in the United States.

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Special Steel

FOR

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Turns out at least **double work** by increased speed and feed, **and cuts harder metals** than any other Steel. Neither hardening nor tempering required.

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Analysis of "Magdalena" Ore.

Silica	4.05
Peroxide of Iron	84.60
Oxide of Manganese	1.65
Alumina	1.24
Lime	0.33
Magnesia	traces
Phosphoric Acid	0.04
Sulphuric Acid	0.42
Combined Water	5.97
Moisture	2.43
	100.43
Metallic Iron	59.22

The Sulphuric Acid exists as Sulphate of Lime and is, in my opinion, not detrimental.

Signed, E. D. RILEY, F. C. S

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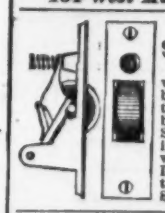

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With which the Sashes work as with weights, their application being at an expense of one-half the cost of applied weights, no boxings being required. The Sashes are Locked with the meeting rail lock. Stands alone in its working. Price $1 per set (four.) Discount to the trade. In use over three years. Robt. B. Huguenin, Sole Maker, Hartford, Ct., U. S. A

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Stove Linings,

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Twenty years practical Experience.

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FOR ROLLING MILLS, BLAST FURNACES, FOUNDRIES GAS WORKS, LIME KILNS, TANNERIES, BOILER and GRATE SETTING, GLASS WORKS, &c.

Fire Clays, Fire Sand, and Kaolin for Sale.

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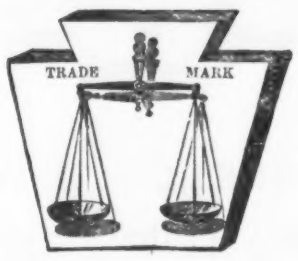

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Any orders sent them will have the same prompt and careful attention as though they were sent us direct. Hoping you will favor them with your orders, we are, Yours truly,

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THE "EAGLE" ANVIL.

LATEST PATENT APRIL 24, 1877.

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WARRANTED!!

Better than the Best English Anvil.

Face in one piece, of BEST TOOL CAST STEEL. PERFECTLY WELDED, perfectly true; of hardest temper and never to come off or "settle." It does not bounce the hammer back, and therefore can do more work with lighter hammer. Horn of tough *untempered steel*, never to break or bend. *Only Anvil made in United States fully warranted as above. None genuine without our trade-mark.*

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BOLSTER SPRINGS FOR FARM WAGONS.

Made of Best Oil Tempered Steel.

The ONLY RELIABLE Bolster Spring in Use.

SIMPLE AND SATISFACTORY.

They save largely from wear and tear in every part of the Wagon. They remove all necessity for a Spring Seat. They convert a Common Lumber Wagon into a Spring Wagon, making it equally comfortable for from one to twenty persons. They are admirably adapted to the wants of Fruit and Vegetable Growers. They are suited to all makes and sizes of Farm Wagons, and can be attached by any one. They make the cheapest and easiest riding Spring Wagon in the market. These Springs have been in practical use for over four years, and are a pronounced success. No Teamster or Farmer can afford to be without them. We want Agents everywhere Send for description and prices, and mention this paper.

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Curtis Pressure Regulator.

Is made entirely of metal; occupies the same space as a globe valve. It has no glands or packing, and is a close-up valve. Write for circular. Manufactured by

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Manufacturers of

BOLT CUTTERS

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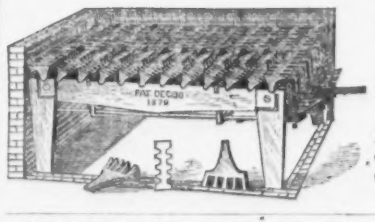
Williams' Patent,



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Fire level. Accumulation of cinders impossible. No cleaning out of fires during the day. Parts easily and cheaply replaced. Seventy per cent. of air space. Thirty days' trial.

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GREEN'S PURE SILICA FIRE BRICK,

MADE BY

LACLEDE FIRE BRICK MANUFACTURING CO.,

SPECIALLY ADAPTED FOR

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Successors to DAY, FARRINGTON & CO., Manufacturers of

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Wrought Store Door and Flush Bolts. Silver Plated, Ornamental Bronze and other Hardware.

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MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil,

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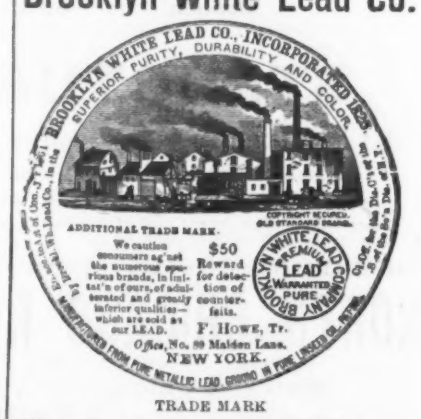

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TRADE MARK

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The Atlantic White Lead and Linseed Oil Co.,

Manufacturers of

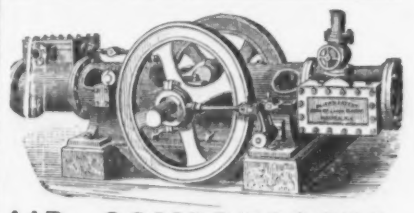
White Lead (Atlantic), Red Lead, Litharge, Glass Makers' Litharge and Orange Mineral;

LINSEED OIL,

Raw, Refined and Boiled.

ROBERT COLGATE & CO.,

287 Pearl St., NEW YORK.



AIR COMPRESSORS.

ALLEN'S

HIGH SPEED AIR COMPRESSORS,

With Positive Moving Valves.

Allen Engines, Stationary and Marine Boilers. Hoisting Machinery. Also, Patent Evaporators and Condensers for Animal Matters.

AIR COMPRESSORS A SPECIALTY.

JOHN McLAREN,

River Street, - - HOBOKEN, N. J.

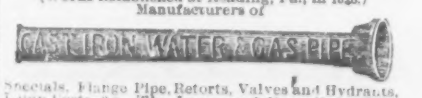
WILLIAM H. AINEY, Chairman. PETER D. WARNER, Sec. and Treas.

Mellert Foundry & Machine Co.,

Limited.

(Works Established at Reading, Pa., in 1848.)

Manufacturers of



Specials, Flange Pipe, Retorts, Valves and Hydrants, Lamp Posts, &c. The Improved Canadian Turbine Water Wheel. Machinery and Castings for Furnaces, Rolling Mills, Grist and Saw Mills, Mining Pumps, Hoists, &c. Columns, Brackets, Iron Railings, &c.

ARNOLD MELLERT, Supt., Reading, Pa.

PHILADELPHIA.

Corrected Weekly by Lloyd, Supplee & Walton.)

erms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wrights, ₩ lb 10½c
Over 250 lbs 11c
Eagle (American) ..... 10c ₩ lb—dis 20 %

Apple Parers.
Penn Apple Parer $6.50
Rotary Peach Parers 13.50
Lots of 10 to 25 dozen special prices.

Axes.
Hunt's Kentucky and Yankee..per doz $9.50 @ 10.00
Mann's Red Warrior ..... " 9.00 @ 9.50
Richland Chief ..... " 8.50 @ 9.00
Beveled Axes ..... add 50c " net
Double Bit Axes ..... net 19.00

Augers and Auger Bits.—New List January 1.
Bates' Nut Augers ..... dis 40 %
Cook's Augers ..... dis 40&10 %
Watrous' Ship Augers ..... dis 15 %
Benjamin Pierce Auger Bits ..... dis 35 %
Griswold Auger Bits ..... dis 40 %
Cook's " ..... dis 40&10 %
Jennings' " ..... dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₩ doz. dis 24&10 %
Stearns' Pat. Hol. Augers, list $48 ₩ doz. dis 20&10

Balances.
Light and Common ..... dis 15&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ..... dis 60&10 %
Swiss Pattern Hand Bells ..... low list dis 30&10 %
Connell's Door Bells ..... dis 20 %
Gt. Western & Kentucky Cow, new list ..... dis 50 %

Bolt and Rivet Clippers.
Chambers' No. 1, for ⅜ bolts ..... each, $7.50
" No. 2, " ½ " ..... " 9.00 } dis 15 %
" No. 3, " ⅝ " ..... " 12.00

Boring Machines.
Upright, without Augers ..... List 5.50 }
Angular, without Augers ..... " 6.75 } dis 40 %

Bolts.—Eastern Carriage Bolts ..... dis 80&10 %
Philadelphia " ..... new list dis 70&10 %
Stanley, Wrought Shutter ..... dis 50&10 %

Braces.—Barber's ..... dis 40&5 %
Backus ..... dis 50 %
Spofford ..... dis 50&5 %
American Ball ..... dis 55 %

Butts.—Cast Fast Joint, Narrow ..... dis 45&10 %
" " " Broad ..... dis 40&10 %
Cast Loose Joint, Narrow ..... dis 55&10 %
" " Broad ..... dis 55&10 %
" Acorn, Loose Pin ..... dis 55&10 %
" " " Jap'd ..... dis 60&10 %
" Mayer's Loose Joint ..... dis 60&10 %
Wrought Loose Pin ..... dis 55&10 %
" Table Hinges and Back Flaps ..... dis 50&10 %
" Narrow, Fast ..... dis 50&10 %
" Loose Joint ..... dis 55&10 %

Blind Butts.
Parker ..... dis 75&2 %
Clark ..... dis 75&2 %
Shepard ..... dis 75&2 %
Lull & Porter ..... dis 70&10 %
Huffer's ..... dis 50 %

Chains.—German Halter and Coil, new list Oct. 22, 1879 ..... dis 50 %
Galvanized Pump ..... ₩ lb 10c net
Best Proof Coil Chain—English.

₩ lb	12	10	8¼	7⅛	7¼	7	gold
	3-16	¼	5-16	⅜	7-16	½	in.

Chisels.—Socket Framing ..... dis 65&10 %
Socket Firmer ..... dis 65&10 %
Butcher's ..... $4.00 to £ gold

Casters.—Bed (new list July 1, 1880) ..... dis 40&5 %
Plate ..... dis 40&5 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880 ..... dis 40 %
Enterprise ..... dis 25 %

Cutlery.—Walden Pocket ..... new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ..... dis 65&10 %
Adjustable Handle ..... dis 15 %

Fry Pans.
Tinned ..... dis 45 %

₩ doz.	$3.50	4.00	4.50	5.00	5.50	6.50	7.50	9.00 10.00
No.	0	1	2	3	4	5	6	8

Burnished ..... dis 60 %

₩ doz.	$3.00	3.75	4.25	4.75	5.25	6.00	7.00	8.00 9.00
No.	0	1	2	3	4	5	6	7 8

Files.
Nicholson ..... dis 30&10 %
Disston ..... dis 40 %
Butcher ..... $4.50 £
Spencer ..... $4.50 @ 4.75 £
E. M. Boynton, new list ..... 25 %

Fluting Machines.
Eagle—2¼ in. roll ..... each, $2.15 }
" —3¼ in. roll ..... " 2.85 } dis 20 %
Crown—4½ in. roll ..... " 3.50 }
" —6 in. roll ..... " 4.00 } dis 20 %
" —8 in. roll ..... " 0.50 }
Geneva Fluter ..... dis 25 %
Favorite com Fluter & Sad Iron ..... ₩ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ..... dis 30 %

Handles.
Boynton's Pat. Saw Handles ..... 35c per pair net.

Hatchets.
Yerkes & Plumb, new list ..... dis 30 %
Hunt ..... dis 25%

Hinges.
Strap and T ..... dis 50&10&10 %

Horse Nails.

	Nos.	5	6	7	8	9	10
Ausable		30	27	26	24	23	22
" Pointed & Pt'd and Blued and Pointed		31	28	3	25	24	23
Globe ..... New list.		28	26	23	22	21	20
Clinton		23	20	19	18		17
" Polished & Pointed		23	21	20	19		18

Porter, all sizes ..... ₩ lb 150. net
Discount on Ausable and Clinton, 30 %; Globe, 10%

Locks and Knobs.
Branford ..... dis 45&2 %
Gaylord Cabinet ..... dis 25&2 % cash
American Padlocks ..... dis 40 &2 % cash
Scandinavian Padlocks ..... dis 60 %

₩ doz.	$5.00	5.50	6.50	7.50	8.50	10.50	12.50 } dis 60 %
No.	17	18	59	60	61	62	63 }
₩ doz.			$18.00		36.00		34.00 } dis 60 %
No.			64		65		66 }

Lanterns.
Nail City ..... ₩ doz, $9.00 net
Square Candle and Oil ..... ₩ doz
Tubular ..... No. 0, $8.55; No. 1, $10.15 ₩ doz net
Globes, 35 cents extra per doz. net.

Lawn Mowers.—Pennsylvania ..... } new list
Philadelphia ..... } dis 30 %
Excelsior ..... }

Lawn and Garden Pumps.
Holland Patent ..... List $6.00 dis 10 %

Mattocks.
Long and Short Cutter ..... new list ..... 35 %
Pennsylvania Pattern ..... per doz 35 %

Molasses Gates.
Enterprise Mfg Co.'s Measuring Faucets ..... dis 25 %
Stebbins' Gates ..... dis 75, 10&5 %
Lincoln's " ..... dis 50&10 %
Landers, Frary & Clark's Petroleum ..... dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1880 ..... dis 40 %
Cork Lined " ..... dis 70 %

Meat Cutters.—Penns'vania Meat Cutter ..... dis 40&10 %
Dixon's ..... dis 30 %
Woodruff ..... dis 30 %
Stowe ..... dis 30 %
Hale's ..... new list, dis 20, 10&2 cash
American ..... dis 25 %
Stuffers ..... dis 30 %
Enterprise Stuffers ..... dis 25 %

Pianos.—Ohio Tool Co ..... dis 30&5 %
Scioto ..... dis 40 %
Auburn ..... dis 40&5 %
New York Tool Co ..... dis 10 %
Bailey ..... dis 20&10 %

Pinne Irons.—Ohio Tool Co ..... dis 20 %
Butcher's 2, $4.50

Plumbs and Levels.
Stanley's Adjustable ..... dis 65&10 %
" Non-Adjustable ..... dis 50&10 %

Picks.—New list ..... 35 %
Pumps.—Bickford ..... $5.00, dis 10 %
Rules.—Stanley Boxwood ..... dis 70&10 %
Stanley Ivory ..... dis 60&10 %

Steelyards.—Hart's Pattern ..... dis 30&10

₩ doz	$14.50	17.75	21 00	26.50	31 00	35.50
Lbs	50	100	150	200	250	300

American Pattern ..... dis 30&10 %

₩ doz	$8.00	10.25	13.75	15.50	16.75	19.50
Lbs	50	100	150	200	250	300

Squares.
Steel and Iron ..... dis 50 %; full case, dis 50&10 %
Try Squares, Stanley ..... dis 50&10 %
Disston's Try Squares ..... dis 40 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ..... ₩ doz $9.00 net
Clipper No. 10, Bronzed Blade, Boxed and Sharpened ..... ₩ doz $8.50 net
Clipper No. 5, Painted Red, Boxed and Sharpened ..... ₩ doz $8.00 net

Saws.—Disston's Hand, Panel and Rip ..... dis 20 %
Disston's Circular ..... dis 40 %
Cross-Cut No. 2, Plain Tooth ..... dis 40%
" Patent Tooth ..... dis 40%
" Champion Tooth ..... dis 40%
Boynton's Lightning Cross Cut, new list ..... dis 20 %
" One Man, all lengths, " ..... dis 20 %
" Billet Webs, 30 inch, " ..... dis 25 %
" Lightning Buck Saws, cross bar ..... dis 25 %
" " Hand, Panel and Rip ..... dis 25 %

Shovels and Spades.
Oliver Ames & Sons, new list ..... dis 15 %
Griffiths ..... dis 40&10 %
Rowland ..... dis 30&10 %

Sad Irons.—4 to 10 lbs ..... ₩ lb 3½c
Mrs. Potts' Patent ..... dis 35 %

Stone.—Arkansas Oil Stone ..... ₩ lb $2.00 net
Washita Extra ..... ₩ lb 28c net
" No 1 ..... " 22½c
" No. 2 ..... " 18c
" Slips ..... " 45c
" Axe ..... " 13c net
Turkey Oil Stone No. 1 ..... ₩ lb $1.00 net
Hindostan Oil Stone No. 1 ..... ₩ lb 60c }
" Axe Stone ..... " 8c } dis 20 & 10 %
" Slips ..... }

Screws.
Flat Head Iron ..... dis 40 %
" Brass ..... dis 10 %
Round Head Brass ..... dis 37 %
" Iron ..... dis 35 %

Spoons.
Plated ..... dis 30, 5&2 %
German Silver ..... dis 30, 10&2 %
Britannia, Boardman's ..... dis 65 %
" Parker's ..... dis 65 %
Tinned ..... dis 10 %

Springs.—Torrey ..... ₩ doz $2.10 10 %
Philadelphia ..... 5 in., $5.00; 8 in., $7.00 ₩ doz. dis 25 %
Chatfield No. 1, $2.75; 2, $3.25; 3, $5.00 ₩ doz, dis 33⅓ %
Gem Cot No. 1, Large Jap'd ..... ₩ doz $3.50 }
" No. 2, Medium Jap'd ..... " 2.50 } 25&10 %
" No. 3, Small Jap'd ..... " 2.00 }

Stocks and Dies ..... dis 10&2 %
Stove Polish.—Gem ..... ₩ gross, $4.50, dis 5 %
" Dixon ..... " 6.00, dis 10%
" Onyx ..... " $4.00 @ 4.25 net

Tacks. ..... dis 30&10 %
Shoe Nails—4 8, 05c.; 3½-8, 10c ₩ lb ..... 10 %
Double Pointed Tacks ..... dis 40&5 %

Traps.
Genuine Oneida—Newhouse ..... dis 30 %
Im. Oneida—Newhouse list, first qual ..... dis 55 %

Vises.—Solid Box, Trenton new list ..... dis 30 %

Wrenches.—Agricultural ..... dis 60&10 %
Coes' Genuine ..... dis 50&10 %
" " Mechanics' ..... dis 40&10 %
" " Mail. Bar ..... dis 75 %
Philada. Tool Co., Duplex ..... dis

Wire.
Bright or Ann'd, No. 0 to 18 ..... dis 52½ to 55 %
" No. 19 to 26 ..... dis 57½ to 60 %
" No. 27 to 36 ..... dis 62½ to 65 %
Coppered, 0 to 18 ..... dis 42½ to 45 %
Tinned Broom Wire ..... dis 45 to 47½ %
Galvanized No. 7 to 18 ..... Market List, dis 32½ to 35 %

Wringers.
Peerless No. 2½ .....
" 3 .....
Universal, No. 2½ .....
" 2 .....
Novelty, No. 10 .....
" 2 .....

PITTSBURGH.

Merchant Iron.

TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

For fluctuations and discounts on card rates see weekly Pittsburgh Trade Report.

The following are card rates.

Flat Bar.

1¼ to 4 by ⅜ to 1 inch 2.5c
4¼ to 6 by ⅜ to 1 " 2.6c
1¾ to 6 by 1¼ to 1½ " 2.9c
1¾ and 1⅝ by ⅜ to ¼ " 2.6c
1 and 1⅛ by ⅜ to ¾ " 2.7c
⅝, ¾ and ⅞ by ⅜ to ⅝ inch 2.9c

Rounds and Squares.

1 to 1⅞	2.5c	⅜ to 9-16	2.7c
2 to 2⅝	2.7c	⅝ to 7-16	2.9c
2¾ to 3¼	3.0c	⅝ "	3.1c
3⅜ to 4	3.5c	5-16 "	3.3c
4¼ to 5	4.0c	¼ "	3.5c
¾ to ⅞	2.6c	3-16 "	5.5c

Oval Iron.

⅞ to 1⅜	2.9c	⅛	3.3c
⅝ to ¾	3.1c	⅜	3.7c

Half Oval and Half Round.

⅞ to 1¼ inch	3.2c	⅛ inch	4.0c
⅝ to ¾ "	3.7c	¾ "	5.5c

Horse Shoe.

⅝ to 1¼ by 5-16 to ¾ inch 3.4c

Wagon Box Iron.

⅞ Inch, Nos. 13 and 14 ..... 3.7c
⅞ " " 11 and 12 ..... 3.4c
⅝ " " 13 and 14 ..... 4.0c
⅝ " " 11 and 12 ..... 3.8c
⅝ " " 13 and 14 ..... 4.4c
⅝ " " 11 and 12 ..... 4 1c

Heavy Bands.

1¼ to 6 by ¼ and 5-16 inch 2.7c
1⅛ to 3¼ by ¼ and 5-15 " 2.7c
1 to 1¾ by ¼ and 5-16 " 2.8c
⅞ to 1⅛ by ¼ and 5-16 " 4.0c
⅜ and ½ by ¼ and 5-16 " 3.4c

Light Bands.

1¼ to 6 by ¼ to 3-16 ..... 3.0c
1¼ to 6 by Nos. 11 and 12 ..... 3 1c
1 to 1¾ by 14 to 3-16 ..... 3.1c
1 to 1¾ by Nos. 11 and 12 ..... 3.2c
⅞ and 13-16 by ⅛ to 3-16 ..... 3.4c
⅞ and 13-16 by Nos. 11 and 12 ..... 3.5c
⅝ and 11-16 by ⅛ to 3-16 ..... 3.7c
⅝ and 11-16 by Nos. 11 and 12 ..... 3.8c
⅝ and 9-16 by ⅛ to 3 16 ..... 4.0c
⅝ and 9-16 by Nos. 11 and 12 ..... 4.1c
½ inch by ⅛ and 9-16 ..... 4.3c
½ inch by Nos. 11 and 12 ..... 4.4c

Hoop Iron.

1¼ to 4, Nos. 13, 14 and 15 ..... 3.3c
1¼ to 2, Nos. 16, 17 and 18 ..... 3.4c
1¼ to 2, No. 19 ..... 3.5c
1¼ to 2, No. 20 ..... 3.6c
1¼ to 2, No. 21 ..... 3.7c
1¼ to 2, No. 22 ..... 3.8c
15-16, 1, and 1⅛, Nos. 13, 14 and 15 ..... 3.5c
15-16, 1, and 1⅛, Nos. 16, 17 and 18 ..... 3.6c
15-16, 1, and 1⅛, Nos. 19 and 20 ..... 3.7c
15-16, 1, and 1⅛, No. 21 ..... 3.8c
15-16, 1, and 1⅛, No. 22 ..... 3.9c
⅞, Nos. 13, 14 and 15 ..... 3.7c
⅞, Nos. 16, 17 and 18 ..... 3.8c
⅞, Nos. 19 and 20 ..... 3.9c
⅞, No. 21 ..... 4.0c
⅞, No. 22 ..... 4.1c
13-16, Nos. 13, 14 and 15 ..... 3.9c
13-16, Nos. 16, 17 and 18 ..... 4.0c
13-16, Nos. 19 and 20 ..... 4.1c
13-16, No 21 ..... 4.2c
13-16, No. 22 ..... 4.3c
¾, Nos. 13, 14 and 15 ..... 4.0c
¾, Nos. 16, 17 and 18 ..... 4.1c
¾, Nos. 19 and 20 ..... 4.2c
¾, No. 21 ..... 4.3c
¾, No. 22 ..... 4.4c
11-16, Nos. 13, 14 and 15 ..... 4.2c
11-16, Nos. 16, 17 and 18 ..... 4.3c
11-16, Nos. 19 and 20 ..... 4.4c
11-16, No. 21 ..... 4.5c
11-16, No. 22 ..... 4.6c
⅝, Nos. 13, 14 and 15 ..... 4.4c
⅝, Nos. 16, 17 and 18 ..... 4.5c
⅝, Nos. 19 and 20 ..... 4.6c
⅝, No. 22 ..... 4.7c
⅝, No. 23 ..... 4.8c
⅝, No. 23 ..... 4.9c
9-16, Nos. 13, 14 and 15 ..... 4.6c
9-16, Nos. 16, 17 and 18 ..... 4.7c
9-16, Nos. 19 and 20 ..... 4.8c
9-16, No. 21 ..... 4.9c
9 16, No. 22 ..... 5.0c
9-16, No. 23 ..... 5.1c
⅛ inch, Nos. 13, 14 and 15 ..... 4.8c
⅛ " Nos. 16, 17 and 18 ..... 4.9c
⅛ " Nos. 19 and 20 ..... 5.1c
⅛ " No. 21 ..... 5.2c
⅛ " No. 22 ..... 5.3c
⅛ " No. 23 ..... 5.4c

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.

1-10c per lb. extra will be charged for cutting hoops to specified lengths.

Barrel Hoops.

1¼ to 2 in., cut to length.

9 to 11 lbs, per set of 6 hoops 3.5c
8 lbs. and less than 9 lbs. per set of 6 hoops 3.6c
Less than 8 lbs. per set of 6 hoops 3.8c

Extras for Cutting to Length all Preceding Iron.

All Iron, including Tire 1.10c

Tank Iron.

No. 9 and heavier 3.3c
Plow Slabs 3.5c
" Wings 3.8c

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.4c	4.0c	6.5c
No. 15 to 17	3.8c	4.4c	6.8c
No. 18 to 21	4.1c	4.6c	7.1c
No. 22 to 24	4.3c	4.8c	7.3c
No. 25 & 26	4.4c	5 0c	7.5c
No. 27	4.7c	5 2c	7.7c
No. 28	5.1c	5 6c	8.1c

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.

1st quality (A) ..... 10½c | 2d quality (B) 9½c
Galvanized C. H. B.—(Charcoal Hammered Blooms.)

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Current discount, 35 % & 40 %.

Coal Screen Iron.

1¾ by ⅝ by 5-16 ..... 3.0c | 1 by ⅝ by 5 16 ..... 4.5c

Angle Iron.

2½, 3, 3½ and 4 inch 3c
1⅝, 1⅞ 2 and 2¼ inch 3.2c
1¾ inch 3.4c
1 " 3.6c
1¼ by 1 in ch, for Plow Handles 3c
1½ by ¾ " " " 3.8c
1⅜ by ¾ " " " 4.4c

T Rail.

8 lbs. to the yard ..... 2.9c | 20 lbs. to the yard 2.8c
12 " " ..... 2.8c | 28 " " 2.8c
16 " " ..... 2.8c | 40 " " 2.8c

Splice Joints for 12, 16 and 20-lb. Rail, 40c each; 28 and 30 lb. Rail, 60c each; 40 lb., 80c each.
3½ by ⅜ and ½ Spikes for 20 and 28-lb. Rail 4½c
2½ and 3 by ⅜ " " 12 and 16-lb. " 4½c
2½ by 5 16 " " 8-lb. Rail 4½c

Fat Rails.—Punched and Countersunk.

1½ to 2 by ½ to ⅝ inch 3.0c
1½ by ⅜ and 7-16 inch 3.1c
1¼ by ⅜, 7-16 and ½ inch 3.4c

Juniata Nail Rods 6.5c
Norway " 3.5c
Guard Iron ⅝x½x⅝ and ⅝x⅝x⅝ 4.0c
" ⅜x⅝x9-10 and ⅜x⅝x⅝ 4.0c
Drag Bars 4.0c
Dropper bars 5c
Cylinder and Landside Iron 4.2c
Plow Beam Iron 3.0c

Nails.

See Pittsburgh Trade Report.

Best Quality Refined Cast Steel.

Square, Flat, Octagon and Round.

¾ to 2 inches, inclusive 11c
5-16 and 2½ to 3 inches 12c
¼ and 3½ to 4 " 13c
7-32 and 4½ to 5 " 14c
3-16 and 5½ to 6 " 17c
5-32 inch 21c
⅛ inch 29c
Oil Well Steel Forgings 10½c

No grade of Crucible Tool Steel shall be sold for less than above price.

Machinery Steel.

	Crucible.	Bessemer & Open Hearth
Ordinary Sizes, ⅜ to 2 inch		
Round	6½c	5c
5-16 and 2½ to 3 inches	7½c	6c
¼ and 3½ to 6 "	8½c	7c
7-32 inch	9½c	8c
3-16 "	11½c	10c

Square, Flat and Octagon, ½c extra throughout the list.

Cut to specified lengths, ½c extra.

Hammer Cast Steel.

2 inches and under ..... 7 c
Above 2 inches ..... 8 c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth.
To 21 gauge	11c	9c	7½c	6c

1c. extra for each additional gauge.
Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.

Auger and Auger Bit 7c
Axle Steel for carriages and wagons 7c
Frog Points and Plates 8½c
" Side Bars 8½c
Pick, plain 6½c
" and Mattock, beveled 7½c
Skate Steel 7c
Table Cutlery 7½c
Pike and Cant Hook 7½c
Coal and Granite Wedge 7½c
Roller 6c
Spindle, subject to Machinery classification 7c
Trap Spring Steel 8c
Forged Crank Pins and Lathe Spindles 9c
Piston Rods, plain 6½c
" forged to shapes 7c
Slide Bars, plain 6½c
" forged to shapes 9c

Crucible, Open Hearth or Bessemer.

Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick 6½c
Boiler, Fire-Box and Flue Sheets, not less than ⅜ thick 7c
Circulars and semi-circulars, when ordered separately 8c
Smoke Stack, to shape 8c
Locomotive Tank Steel 7c

File Cast Steel.

Square, Round, Half Round and Flat Bastard, 8-inch and over 8c
Mill Saw, 8-inch and over 8½c
Taper, 3½-inch and over 9½c
Horse and Shoe Rasp 8½c

Spring Cast Steel.

Spiral and Taper, cut to lengths 6½c

Tire Cast Steel.

1x1¼ and over 7½c
1x3-16, ⅞x3-16 and ¼ 8c
1 and 13-16x⅜ and 5-32, ¾x3-16 and 5-32 ..... 8½c
¾ and ⅝x½ and 3-32 and 12 g 9c
Solid Safe Cast Steel 7c

Agricultural Implement Cast Steel.

Fork and Rake, Crucible 7c
Horse Rake Steel, cut to lengths, Crucible 7c
Hoe, Crucible 7½c
Corn Stalk Cutter, beveled 6½c
Beveled Hoe and Shovel Steel in Bars 7½c
Crucible Plow Steel in slabs 6c

Bessemer and Open Hearth.

Spring 4½c
" spiral and taper, cut to lengths 5½c
Tire, 3-16 thick and above 4½c
Toe Calk 4½c
Plow 4½c
Axle Billets 4c
Sleigh Shoe 4c
Cutter Shoe, cut to lengths and tapered 5½c
Scythe Back Steel 4c
Grain Drill Bars 4c
" Points 7½c
Rolling Coulter Blanks, cut and punched 8½c
Thrasher Steel 4½c
" Teeth 5½c
Rolled Hammer Billets 4½c

Where Bessemer or Open-hearth Steel can be used in place of Crucible, the difference in price shall not be greater than 1c. per lb., except where especially provided in the list.

Terms.—Four months; 3 per cent. discount for cash, if remitted within 5 days.

Rolls and Castings.

Furnace, Floor and Straightening Plates 2½c
Housings and Castings not otherwise specified ..... 3 c
Guide Plates 3½c
Spindles and coupling boxes ..... 3 c
Sand Rolls and Pinions, large size ..... 3 c
" small size 3½c
Pipe Mill Castings ..... 5 c
Rolling Mill Castings under 50 lbs ..... 4 c
Spur and Bevel Wheels, large 3½c
" " small 4½c
Pulleys up to 40 inches 4½c
" over 30 inches 4½c
Engine Castings, light 4½c
" " heavy 4½c

Chilled Rolls.

6 to 7 in. diam., 7 to 20 in. long 4½c
8 to 12 in. " 8 to 40 in. " 4½c
25 to 24 in. " 15 to 72 in. " 4½c
14 to 31 in. " 72 to 108 in. " 4½c

White and Red Lead.

Strictly Pure White Lead in Oil, in kegs, 7c.; in 25 ₩ Tin Pails, 8c. ₩ lb over keg price; 12½ ₩ Tin Pails, 10c ₩ lb over keg price; assorted, 1 to 5 ₩ cans, 30. per ₩ over keg price.
Dry White Lead 7c
Red Lead, very brilliant, in kegs, 7c; in barrels, 6½c
Litharge (Potter's Lead) " 7c; " 6½c
Freights equalized with all points.
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 2½ per cent. will be allowed, but not otherwise.

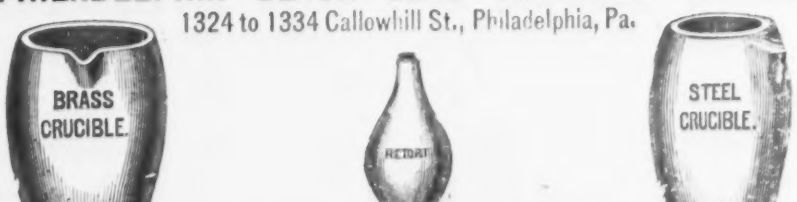
Window Glass.

Per Box of 50 Feet.—Discount 60&10 % on single strength, 60&20 % on double.

Single Strength.

Size.	AA.	A.	B.	C.
5 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 26 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9 00
26 x 46 to 26 x 44	14.50	13.25	10.75	9 50
26 x 46 to 30 x 60	16.00	14.00	11.25	10.50
40 x 42 to 30 x 54	16 00	14 50	12.00	
40 x 46 to 34 x 60	17.25	16.00	14.00	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	
Double Strength.				
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	16.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	24.25	21.25	17.25	
26 x 46 to 30 x 60	24.50	22.50	18.00	
40 x 42 to 30 x 54	26.75	23.25	19.25	
40 x 46 to 34 x 60	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	34.25	30.50	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 81 united inches bracket.



BOSTON.

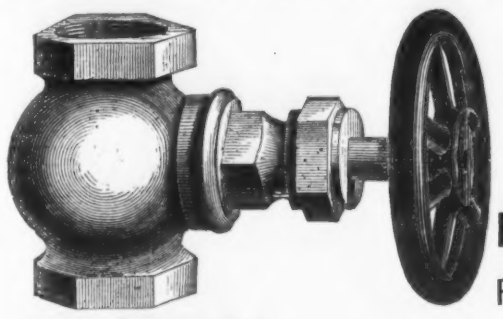
Reported by Macomber, Bigelow & Dowse.

Anvils.—"Eagle American"..... ₩ ℔ 9½c. dis 20 %
Anvil & Vise.—
No. 1, $4.25; 2, 4.25; 3, 3.50 each..... dis 25 %
Augurs & Bitts.—Snell's Auger..... dis 40&10 %
L'Hommedieu's Ship Augs..... dis 15 %
Jenning's Bitts..... dis 10&10&10 %
Cook's Bitts..... dis 40&10 %
Sheparason's Double-Cut Bitts..... dis 45 %
" " Gimlets..... dis 40 %
Stearn's Extension Hollow Augers—
No. 2, ₩ doz, $48.00, No. 3, ₩ doz, $60.00 list, dis 20 %
Bonney's Extension Hollow Augers....₩ doz $36.00
Pierce's Bitts..... dis 40 %
Griswold " ..... dis 40&10 %
Axes.—Blue Jackets..... per doz 9.00
Red Cross..... per doz 8.00
" Handled..... per doz 12.00
Dowse " Boys'..... dis 33⅓ %
Ax Handles.—
Oak Extra, 31 in., No. A..... ₩ doz $2.15
" 34 in., No. A..... ₩ doz 2.30
" 31 in., No. B..... ₩ doz 1.75
" 34 in., No. B..... ₩ doz 2.00
" 31 or 34 in., No. C..... ₩ doz 1.25
Axle Clips..... dis 50 %
Balances.—Chatillon's..... dis 15&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers)....per ft. 2c
" Half-Round..... per ft, ⅝, 30, ¾, 4c
Wrought " ..... per ft, ⅝, 3c; ¾, 4c; ¾, 5c
Bells.—Connel's Crank Gong reduced list..dis 20&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1879..... dis 40 %
Brass " " 1879..... dis 33⅓ %
Blind Fasts.—Lock Fasts..... ₩ C sets $5.00
No. 5 Fasts..... ₩ C sets 6.50
Veazie Fasts..... ₩ C sets 6.50
Shedd's..... ₩ C sets 7.00
Blind Hinges.—Mail. Hook, 3 holes....₩ C sets 8.50
Brad Awl Handles.—
Phœnix Adjustable..... ₩ doz $2.00
Belts.—Norway Iron Carriage..... dis 70&5 %
Common " ..... dis 80&5 %
Borax.—Refined..... ₩ ℔ 14c
Boring Machines.
Eagle Upright each, ... $5.50 list ;
Eagle Angle each, ... 6.75 list ; dis 40&10%
Snell Augers..... ₩ set 2.43
Braces.—Barber's..... dis 40& 5 %
Spofford's..... dis 40 & 5 %
Backus'..... dis 50 & 10 %
Bracket Saws.—Holly Scroll Saw..... each, $2.40
Demas Lathe and Scroll Saw..... " 6.40
Bracket Saws, extra quality, 10 No. 4..... ₩ gro $6.75
Steel Frame, with patterns..... ₩ doz 6.40
Lester..... dis 20 %
New Rogers, all iron..... dis 25 %
Bracket Saw Blades.
Griffith's patent..... ₩ gross 750
Brackets.—H. L. & M. Flower Pot reduced list—
..... dis 30&10 %
Bronzed Shelf, H. B. & D. newlist..... dis 60&10 %
Store Shelf..... dis 40&10 %
Bronze Hardware.—
Butts.—Union Fast Joint..... 45&10&10 %
" Loose " ..... dis 55&10&10 %
" Japanned Acorn..... dis 55&10&10 %
" Silvered " ..... dis 55&10&10 %
" Boston Finish..... dis 75&10 %
Union Spiral Spring..... dis 25&10 %
Wrought Brass..... dis 75 %
Carriage Bolts.—Eagle Norway..... dis 70&5 %
" Common ..... dis 80&5 %
Carriage Jacks.
"Climax" No. 1..... ₩ doz $20.00
" No. 1½..... " 15.00
" No. 2..... " 13.50
"Universal"..... dis 25 %
" No. 1..... each, $2.00
" No. 2..... " 3.00
" No. 3..... " 5.00
" No. 4..... " 6.00
" No. 5..... " 6.50
Cartridges.—U. S. Cartridge Co..... dis 70 %
Cards.—Watson's make, Horse and
" Curry..... dis 10 % } New List,
" Cotton..... dis 10 % } July 1881.
" Wool..... dis 10 % }
Casters.—Bed and Table ..... dis 40 %
Chain.—Traces 6½, 10, 4, straight..... ₩ pair 45c
" 6½, 10, 4, twisted..... ₩ pair 50c
" 7, 12, 2, " ..... ₩ pair 70c
Coil 3-16..... ₩ ℔ 11 c
" ¼..... ₩ ℔ 8 c
" 5-16..... ₩ ℔ 7 c
" ⅜..... ₩ ℔ 6 c
" 7-16..... ₩ ℔ 5½c
" ½..... ₩ ℔ 5½c
Chain.—White, Carpenter's..... ₩ gross 80c
Red, Carpenter's..... ₩ gross 80c
Blue " ..... ₩ gross $1.00
Chisels.—Hart, Bliven & Read, Framing dis 50&10&10 %
Underhill, Framing..... dis 20 %
Buck's Chisels..... dis 30 %
Clothes Line.—
Galvanized Wire, 100 feet each..... ₩ doz $4.00
Coal Hods.—"Dover."—Galvanized, new list..dis 50 %
Japanned, new list..... dis 50 &10%
Coffee Mills.—New list..... dis 33⅓ & 10 %
Copper Rivets..... dis 33⅓ %
Cow Ties..... dis 33⅓ %
No. 30, 3 ft. No. 6 Wire, with toggle..... ₩ doz $3.80
No. 35, 3 ft. " " with snap..... ₩ doz 4.00
No. 40, 3½ ft. " " with toggle..... ₩ doz 4.30
No. 45, 3½ ft " " with snap..... ₩ doz 4.40
No. 50, 4 ft. No. 4 " with toggle..... ₩ doz 4.75
No. 55, 4 ft. " " with snap..... ₩ doz 5.00
No. 60, 4½ ft. " 3 " with toggle..... ₩ doz 5.00
No. 65, 4½ ft. " " with snap..... ₩ doz 5.50
Cocks.—Brass, L. F. & C..... dis 45 %
Cordage.—Manila, usual trade dis 10..... ₩ ℔ 15
Jute..... ₩ ℔ 9c
Crow-Bars.—Cast Steel..... ₩ ℔ 8c
Iron, Steel Pointed..... ₩ ℔ 6c
Cutlery.—Pocket, American Shear Co.'s..... dis 40 %
Butcher Knives, "Woods." Lap Bolster. Square Handle..... dis 30 %
Steak Knives..... dis 25%
" Lap Bolster, Oval Handle..... dis 20 %
Sticking..... dis 30 %
Skinning..... dis 30 %
Butcher, Common Round Handle, "Woods"..... dis 20 %
Shoe Knives, "Woods"..... dis 20 %
Dividers.—Cook's..... dis 25 %
Dog Collars..... dis 20 %
Dog Muzzles.—Automatic..... dis 15 %
Door Springs.—Torrey's Rod..... ₩ doz $2.00
Imitation Torrey's Rod..... ₩ doz $1.75
Gem Coil, new list..... dis 33⅓ %
Crown..... ₩ doz $1.25
Warners..... ₩ doz $2.00
Door Stops.—"Thurston's"..... dis 50 %
Drawer Knobs.—"Thurston's"..... dis 50 %
Drills.—Morse Bitt Stock..... dis 25 %
Morse Straight Shank..... dis 20 %
Emery.—Wellington Mills..... ₩ ℔ 10c
Walpole Emery Mills..... ₩ ℔ 8c
Turkish in 10 ℔ cans..... ₩ ℔ 8c
Enamelled Ware.
Standard Mfg. Co. Kettles..... dis 40 &10 %
" Sauce Pans..... dis 25 %
Felloe Plates.—Wrought..... ₩ ℔ 9c
Files.
American File Co..... dis 40 %
Nicholson " ..... dis 40 %
Fluting Machines.
Knox list, $4.00..... dis 20 %
American list, $3.40..... dis 20 %
Forks. W. C. & Co., Manure..... dis 50 %
Gimlet Bitts.
Genuine German, No. 135, 1-32 to 8-32, per doz $1.00
Pierce's..... per doz 880
Glass Cutters.
Combination Class Cutter and Knife Sharpener..... ₩ doz $1.0
Grub Hoes.—K. P. & Co.'s No. 2, 11.50 ₩ doz. dis 30 %
Hammers.—Maydole's..... dis 15 %
Hartford Hammer Co..... dis 20 %
Hangers & Rollers.—Anti-Friction..... dis 50&10 %
Acme Rollers..... dis 50 %
Climax..... dis 50 %
Common Hangers..... dis 50 %
" Rollers..... dis 50 %
Hand Screws..... dis 10 %
Hatchets.—C. F. Dowse new list..... dis 33⅓ %
Underhill..... dis 25 %
Hay Knives.—Lightning..... ₩ doz $18.00 net
Fisher's Patent..... ₩ doz @14.00
Hinges.—Strap and T (new list)..... dis 50&10&10 %
Providence Plate..... ₩ ℔ 4½
Wrought Screw Hook..... ₩ ℔ 4 %
Hoes.—W. C. & Co.'s..... dis 50
Hooks and Staples.—Brewers'.....new list, dis 70%
Horse Nails. No. 6 7 8 9
National Finished..... .23 .21 .20 .19....dis 20 %
Putnam Pointed..... .28 .26 .24 .24....10&10 %
Horse Nails.—Bridgewater..... dis 25 %
No. 6 23; No. 7, 21, No. 8, 20; No. 9, 19.
Ice Cream Freezers.—Packer's, new list dis 40&10 %
Knobs.—"Norwalk." New list..... dis 15 %
Silver Glass..... dis 50&10 %
" Bell Pulls..... dis 50&10 %
Lanterns.—Guarded No. 99..... ₩ doz 7.40
Tubulars, No. 0..... ₩ doz 8.00
Railroad, Oil, No. 43..... ₩ doz 9.00
Trianguiar..... ₩ doz 4.00
Harricane..... dis 20 %
Lawn Mowers.—The "Daisy."
12 in. cut..... each, $3.50
14 in. cut..... " 9.00
16 in. cut..... " 9.40
18 in. cut..... " 10.00
Lead.—Sheet..... ₩ ℔ 7½c
Pipe..... ₩ ℔ 7 c
Locks.—Norwalk Genuine Bronze Goods..... dis 45 %
Eagle Cabinet..... dis 25 %
" Trunk..... dis 15 %
W. Wilcox & Co., Padlocks..... dis 40 %
Manure Forks.—W. C. & Co..... dis 50 %
Mattocks.—K. P. & Co., Long Cutter, 16.00 ₩ doz.
..... dis 30 %
K. P. & Co., Short Cutter, 15.40 ₩ doz..... dis 30 %
" " Pick " 16.00 ₩ doz..... dis 30 %
Measuring Tapes.—Eddy's..... dis 20
Meat Cutters.—Mlles' Challenge..... dis 30 %
Hale's, (New list)..... dis 40 & 10 %
American..... dis 25 %
Money Drawers.—Tucker's Alarm..... ₩ doz $22.50
Mouse Traps.—Delusion..... ₩ doz 2.00
Novelty..... ₩ doz 75
Nails...... ₩ keg. 3.15
Oilers.—Zinc and Tin..... dis 50 %
Brass and Copper..... dis 40 %
Ox Bows.—Extra finished and varnished..... list net
1¼ in., ₩ doz. pair..$5.75 | 2 in., ₩ doz. pair....$9.00
1½ in., " " .. 8.00 | 2½ " " " 11.00
Padlocks.—W. Wilcox & Co.'s..... dis 40 %
Paper.
Tarred Sheathing..... ₩ ℔, 2½c
Tarred Eagle Brand..... ₩ ℔, 2½c
Picks.—K. P. & Co., Adze Eye, 5 to 6 ℔ 12.00..... dis 30 %
" " " 6 to 7 ℔ 13.00..... dis 30 %
Planes.—Auburn Tool Co..... dis 30 %
Fancy Planes..... dis 25 %
Eagle " ..... dis 30 %
N. Y. Tool Co..... dis 40 %
English Iron..... dis 30%
Bailey's..... dis 20&10 %
Plated Ware.—Rogers & Bro..... dis 10&5 %
Pliers.—Vom Cleff & Co.'s..... net list
Button's Wire Pliers..... dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co..dis 50&10 %
Pocket Knives.
American Shear Co.'s..... dis 40 %
Potato Diggers.—W. C. & Co, reduced list...dis 40 %
Pulleys
Acme or Excelsior, 1¾ in..... per doz 200
" " 2 in..... " 230
Pulley Blocks..... dis 40 %
Pumps.—Union Manufacturing Co.
Iron Cistern..... dis 50 %
" Pitcher Spout..... dis 40 %
Copper..... dis 30 %
Rivets.—Black..... dis 65 %
Carriage in 10 ℔ papers..... dis 15 %
Copper..... dis 33⅓ %
Razors.—Torrey's..... dis 10 %
Razor Strops.—Torrey's..... Full line
Rules.—Stanley..... Boxwood, dis 70&10 %
" Ivory, dis 60&10 %
Sadirons.—Common..... ₩ ℔ 3½c
Laundry..... ₩ ℔ 6½c
Tailor's Geese..... ₩ ℔ 6 %
Enterprise, "Potts"..... dis 35 %
Sash Locks.—King & Hutchinson's, new list, dis 40 %
Sandpaper.—Baeder & Adamson..... dis 25 %
M. B. & D..... dis 25&5 %
Sash Weights.—Patent Eye..... ₩ ℔ 1¾c
Saws.—Hand Saws, Disston's..... dis 20 %
Wheeler & Clemson..... dis 20 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1..... ₩ foot 34c
" " Champion " ..... ₩ foot 34c
Disston's, Common " ..... ₩ foot 65c dis 40%
" Gt. American " ..... ₩ foot 65c dis 40%
Boynton's Lightning " ..... ₩ foot 45c
M. B. & D., Hand Saws..... dis 25 %
W. M. & Co.'s. Circular Saws..... dis 35 %
Richardson Bros..... dis 25 %
Saw Blades.—Disston..... dis 20 %
W. M. & C..... dis 13 %
Welch & Griffith, Extra..... ₩ doz $3.40
" " No. 2..... ₩ doz 7.00
Scales.—Fairbanks..... dis 20 %
Screws.—Aiken's Flat-Head Iron....new list, dis 40 %
American Flat-Head Iron..... " dis 40 %
" " Brass..... " dis 40 %
" Round-Head " ..... " dis 30 %
" " Iron " ..... " dis 35 %
Grilley " Nickel-plated Common..dis 40 %
Scythes.—Clippers, in boxes..... ₩ doz $9.00%
Shaves.—Kimball's..... ₩ inch 75c%
Watrous..... dis 15 %
Shears.—American Shear Co., new list..... dis 70 %
Shot.—Tatham's..... ₩ ℔ 7c
Shovels.—O. Ames, new list..... dis 15 %
O. Ames, other brands, new list..... dis 15 %
M. B. & D..... dis15 %
Oxford Birmingham Pattern..... dis 40 %
Sinks.—Morse Patent..... dis 30 %
Snow Shovels.—Malleable tips..... $4.00
Snaps.—Union..... dis 25 %
Acme..... dis 25 %
Stock and Dies.—King's..... dis 10&5 %
Tacks.—A. Field & Son's..... dis 30&1 %
Pittsfield..... dis 50&10 %
Swedes Tinned..... 15&10 %
Swedes Iron..... 30&10 %
Gimp and Lace..... 30&10 %
Copper Tacks..... 30&1 %
All balances on list..... 25&10 %
Traps.—Oneida, Genuine..... dis 33⅓ %
Oneida, Imitation, H. & N..... dis 50 %
Blake's..... dis 40 & 10 %
Vises.—Simpson's Adjustable..... dis 25&5 %
Howard Vise Co..... dis 25 %
Prentiss'..... dis 20 %
Weather Strips.—Packer's..... ₩ doz $4.50
Browne's Flexible Rubber..... dis 30 %
In 25 feet boxes; No. 1, ⅛ in. wide, ₩ yard 10c. No. 2, ¾ in., 15c. No. 3, ¾ in., 20c.; No. 4, 1 in., 25c.
Black Walnut Spring Weather Strips....₩ doz. $3.50
Window Springs...... dis 20 %
Babcock's No. 1..... ₩ gross $6.00
" " 2..... ₩ gross 4.15
Wire Cloth.—"Clinton"..... ₩ ft 3 c
Wire Fence.
Scutt's Patent, Painted..... ₩ ℔ 8½c
" Galvanized..... ₩ ℔ 9½c
Wire Goods.—Gate Hooks and Eyes, &c new list..... dis 65&10 %
Wrenches.—A. G. Joes..... dis 50 %
Girard Mfg. Co..... dis50 %
Girard Agl..... dis 70 %
Wringers.
Universal, No. 2½..... ₩ doz 44.00
Novelty, No. 2..... ₩ doz 44.00
Excelsior, No. A..... ₩ doz 60.00
" No. B..... ₩ doz 72.00
" No. CC..... ₩ doz 105.00
Novelty Set Tub, E..... ₩ doz 57.00
Eureka..... ₩ doz 48.00
Keystone, Wood Frame No. 1½..... ₩ doz 42.00
" Iron Frame No. 2½..... ₩ doz 42.00
Zinc..... ₩ ℔ 7½
Withington, Cooley & Co.—Hoes, Rakes, Forks &c dis 50 % Special rates for Export.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS AND VALVES,



For STEAM, WATER and GAS.

WROUGHT IRON PIPE AND FITTINGS,

PLUMBERS' MATERIALS

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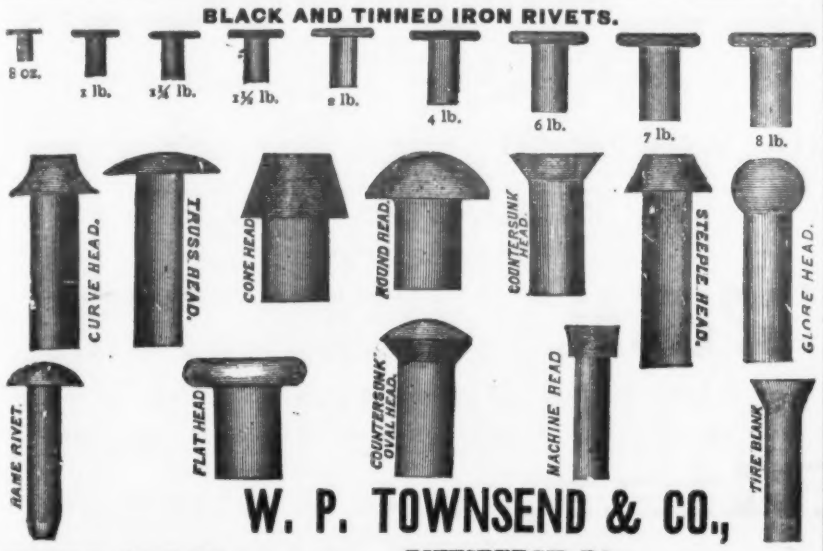
BLACK AND TINNED IRON RIVETS.



W. P. TOWNSEND & CO.,

PITTSBURGH, PA.,

Manufacturers of every description of First Quality

RIVETS.

HENRY B. NEWHALL, 105 Chambers St., New York Agent.

WM. H. HASKELL & CO.,

Pawtucket, R. I.

MANUFACTURERS OF

COACH SCREWS,

(With Gimlet Points),

ALL KINDS OF

Machine and Plow Bolts,

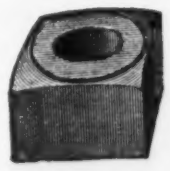
FORGED SET SCREWS AND TAP BOLTS.

HENRY B. NEWHALL, 105 Chambers St., New York Agent.

STANDARD NUT CO.,

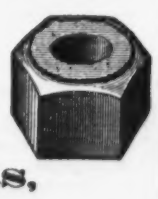
Pittsburgh, Pa.,

MANUFACTURERS OF



HOT PRESSED

Square & Hexagon Nuts,



R. R. FISH BARS, BOLTS, SPIKES, RIVETS, &c.

HENRY B. NEWHALL, 105 Chambers St., New York Agent.

Philadelphia "STAR" Bolt Works.

NORWAY IRON FANCY HEAD BOLTS,

Carriage & Tire Bolts. Star Axle Clips, &c.

TOWNSEND, WILSON & HUBBARD, 2301 Cherry Street, Philadelphia, Pa

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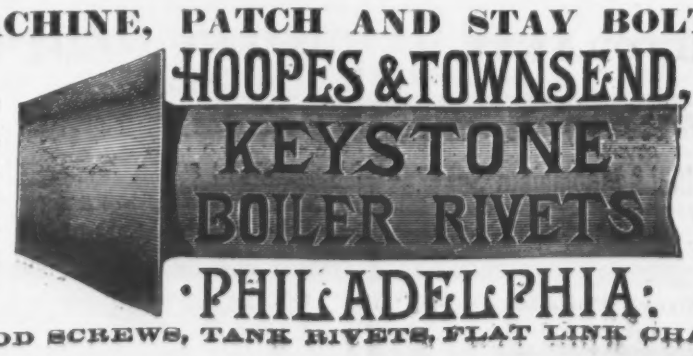
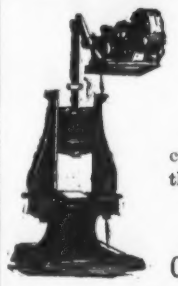
MACHINE, PATCH AND STAY BOLTS.

NUTS Cold Punched. WASHERS



WOOD SCREWS, TANK RIVETS, FLAT LINK CHAIN.

BEECHER & PECK,



Successors to Milo Peck, Manufacturers of

PECKS DROP PRESS

PECK'S DROP LIFTER is the only one which has its parts cushioned. Being thus cushioned they are the most durable Lifter in the market.

Can be attached to any drop now in use.

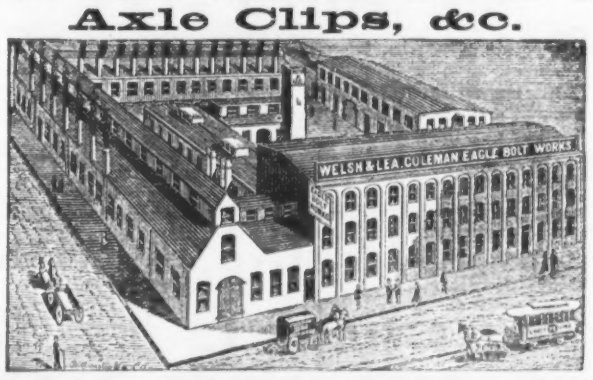
Our New Illustrated Catalogue is just out.

Cor. Lloyd and River Sts., **New Haven, Conn.**

NORWAY IRON CARRIAGE & TIRE BOLTS,

Axle Clips, &c.

Only Medal, Phila., 1876.



Only Medal Paris, 1878.

COLEMAN EAGLE BOLT WORKS,

WELSH & LEA, Philadelphia, Pa.

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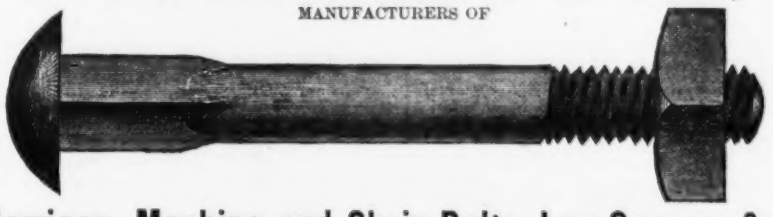

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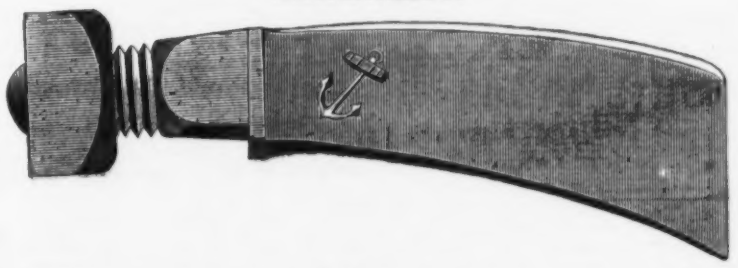

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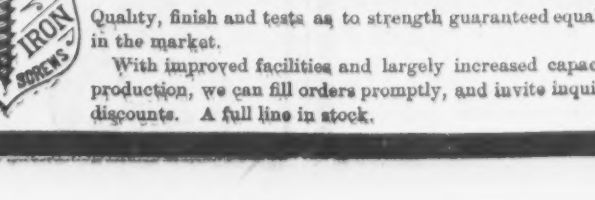

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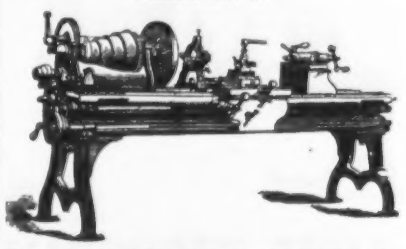

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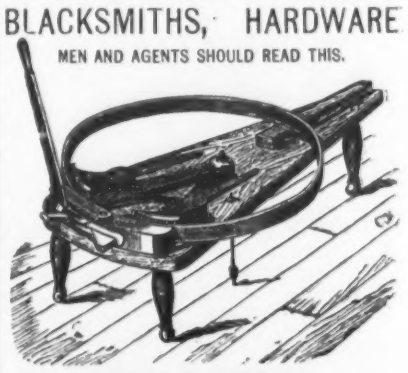

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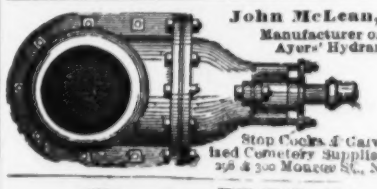

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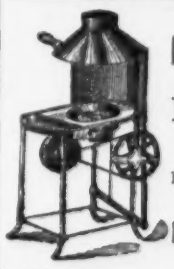

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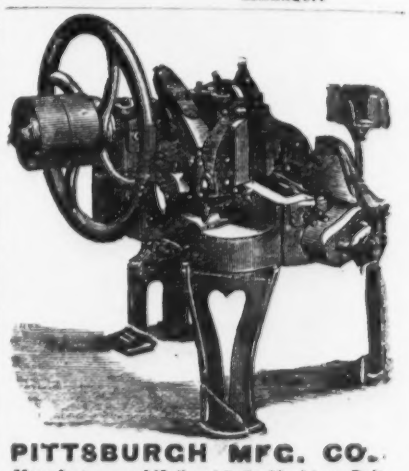

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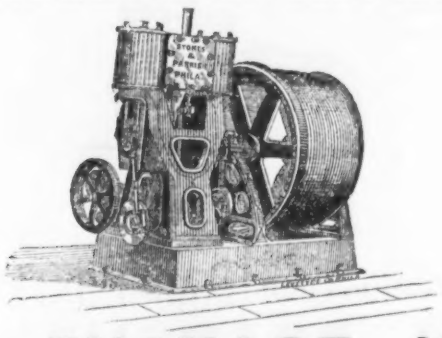

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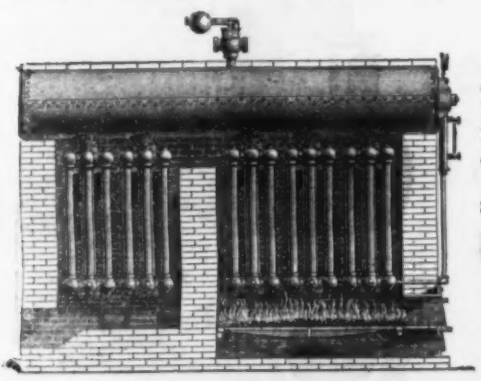

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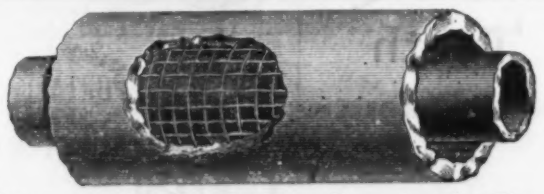

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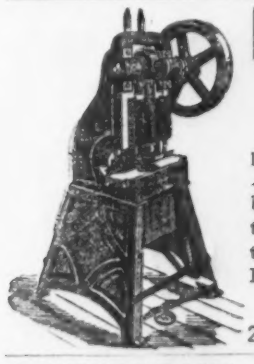

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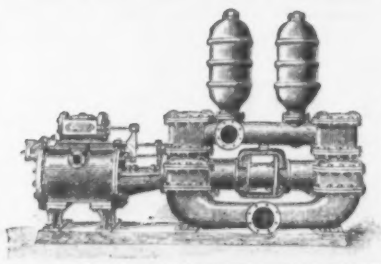

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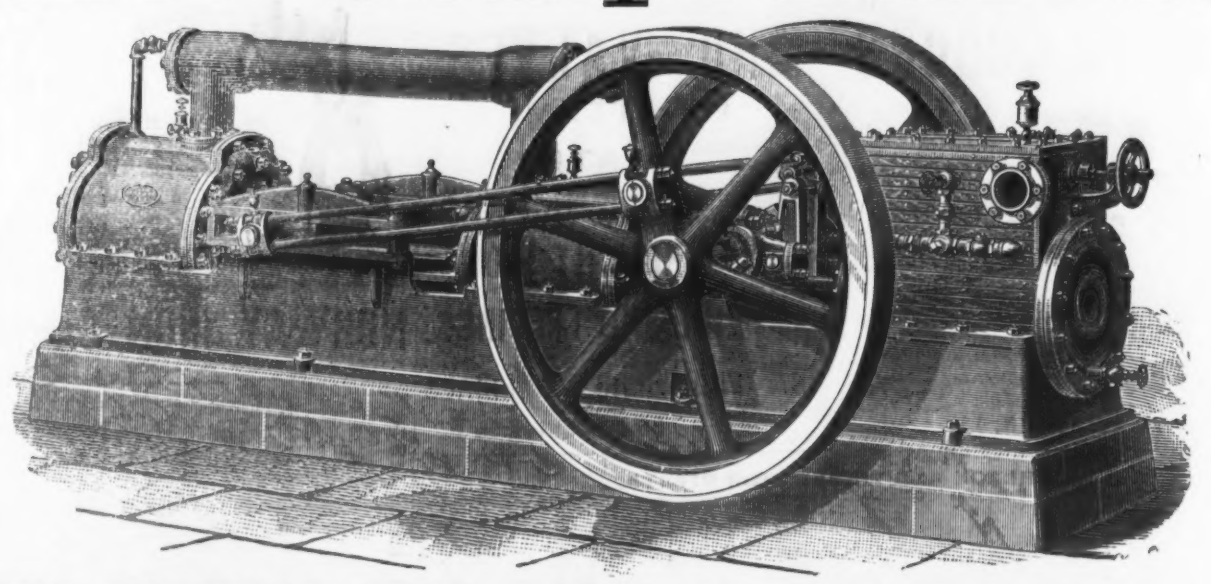

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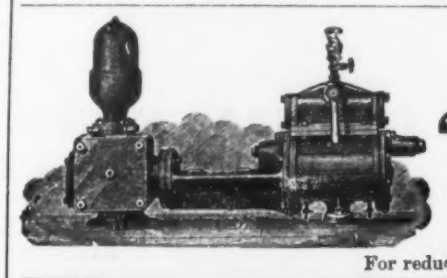

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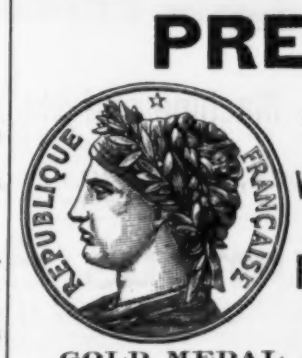

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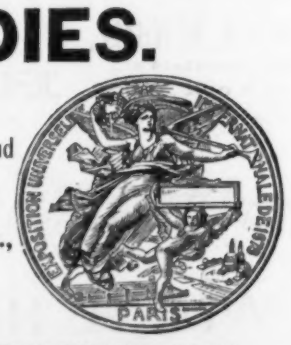

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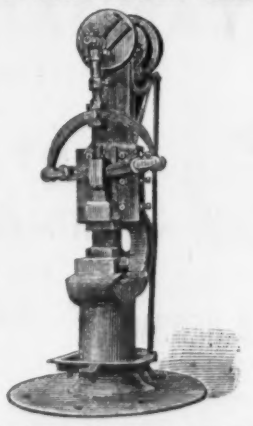

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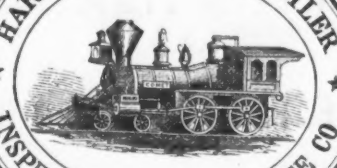

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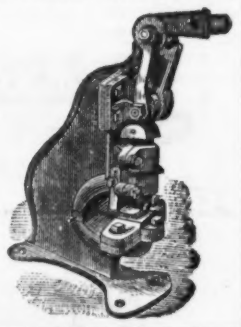

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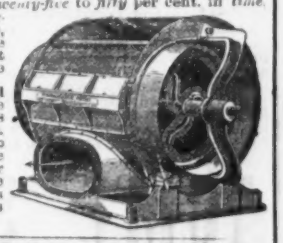

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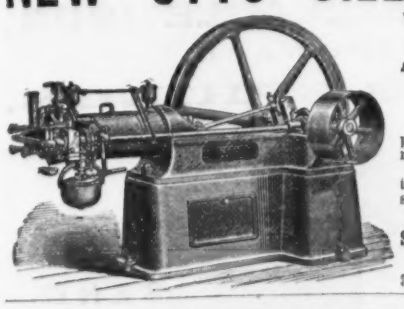

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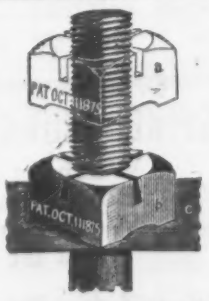

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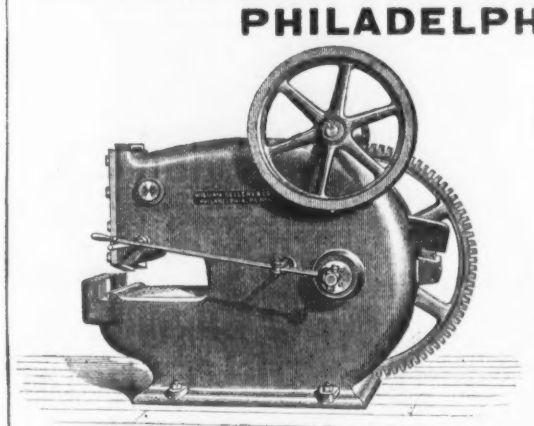

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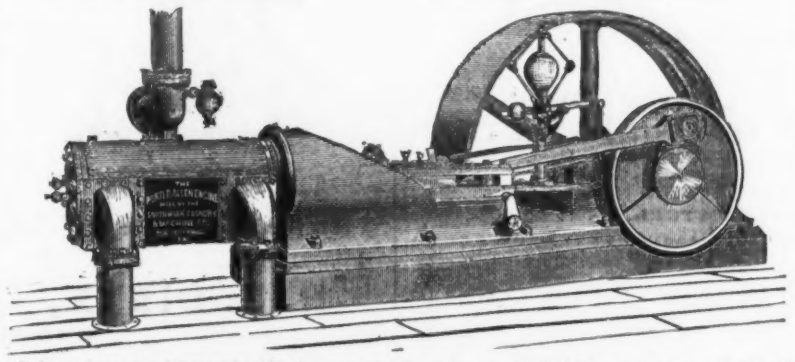

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ONCE MORE AHEAD.

FIRE! FIRE!! FIRE!!!

From NATIONAL LINE, Pier No. 39, North River, Foot of Houston St., NEW YORK, May 19, 1881.

PULSOMETER STEAM PUMP CO.:

In addition to my memo. dated March 3, I specially desire to inform you of the working of your No. 7 New Pulsometer as a fire extinguisher. After having done with it for the purpose that it was intended for (pumping water from the cofferdams), I had it placed in the fire room simply for storage in case it should be required again for the same purpose. Afterwards, it was put up for washing down the wharf, and by applying a 1¼ inch nozzle, salt water was drawn from the river and thrown a perpendicular distance of 100 feet; so in case of fire on any part of the pier the pump can be set working almost instantly.

I congratulate you on the improvements I have discovered you have made and the many uses it can be applied to. We are always ready to exhibit it to those looking for such a pump, and every pier and warehouse where steam is used should not be without a New Pulsometer.

Yours truly, GEO. L. ANDREWS, Wharfinger.

Send for book giving full description, reduced prices, and many letters of commendation from leading manufacturers and others throughout the country who are using them.

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Chicago Office, *198 Lake St., H. T. CASWELL.*

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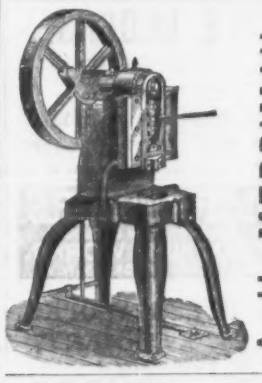

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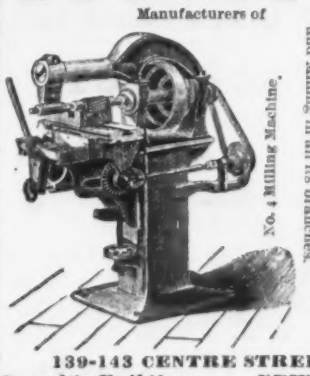

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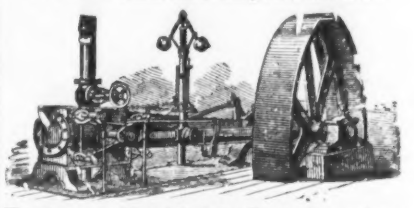

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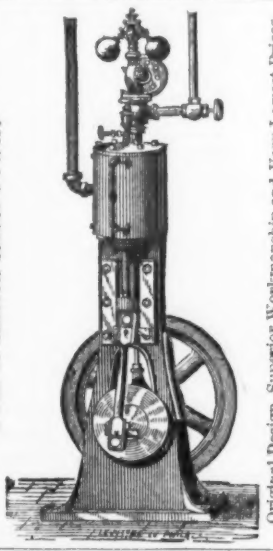

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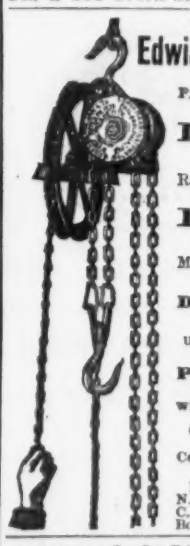

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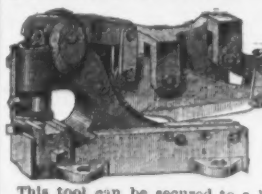

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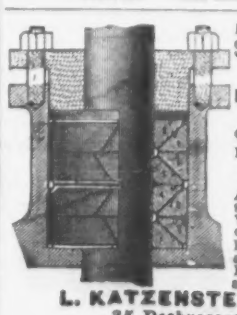

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